

Building Stone in Nova Scotia

G.B. Dickie

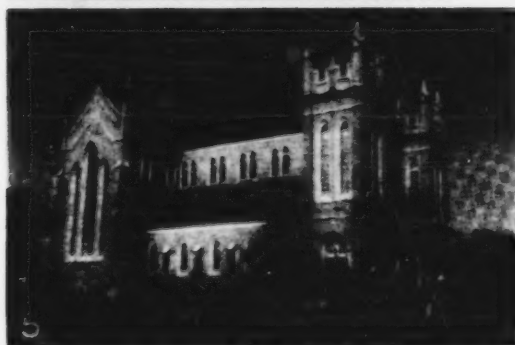
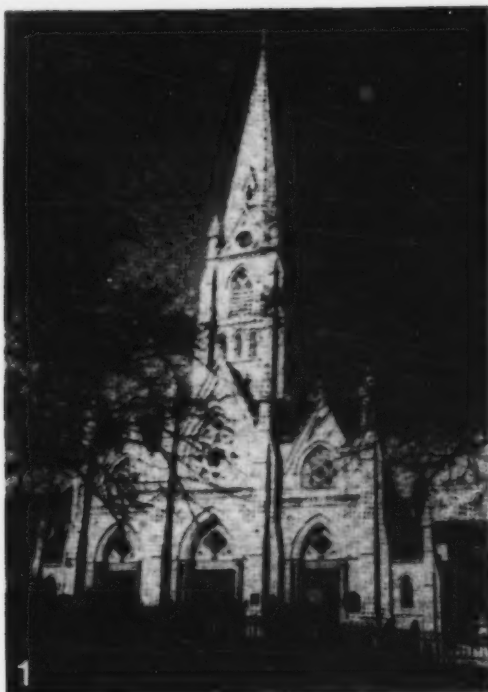
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Honourable Eleanor Norrie
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Deputy Minister

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(1) St. Mary's Basilica, Halifax; Queen and King Quarries, Purcells Cove, Halifax County, granite and ironstone; (2) New Glasgow Town Hall, New Glasgow; McKeens Quarry, Pictou County, buff sandstone; (3) Bank of Montreal, Sydney; Wallace Quarries Ltd. Quarry, Cumberland County, olive sandstone; (4) Dominion Public Building (former Halifax Post Office), Halifax; Wallace Quarries Ltd. Quarry, Cumberland County, olive sandstone; (5) St. Bernard Church, Digby County, Shelburne Island Park Quarry, Shelburne County, grey granite.

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BUILDING STONE IN NOVA SCOTIA

by

G. B. Dickie

ABSTRACT

Nova Scotia stone has been used for the construction of buildings and monuments since the times of earliest European settlement. Over 250 quarries have been documented. Carboniferous age sandstones of Cumberland, Colchester, Pictou and Antigonish Counties account for much of the total building stone production. Sandstone was desired because of rich, earth tone colours, workability and availability. Building construction techniques used stone as load-bearing walls, often with decorative exterior treatment.

Rocks of granitic composition have also been quarried in Nova Scotia chiefly in the Halifax area and in parts of Annapolis and Shelburne Counties. Although some granite dimension stone was used in building construction, the majority of granite production was used in the monument and grave marker trade.

Stone buildings require maintenance and, in some cases, complete restoration. Replacement stone matching the original is often required. This study has identified and inventoried 51 quarries and quarry prospects. They are described in detail and organized alphabetically by rock type, colour, county and quarry name.

The most historically significant quarries and those with the best development potential were assessed by diamond drilling. Large blocks were recovered from many quarry sites for further testing and analysis. A building stone catalogue complete with samples was prepared (Nova Scotia Department of Mines and Energy, Sample Catalogue 89-01).

Sources of brown, red, buff, olive and grey sandstone are described from locations including Amherst, Cumberland County; Eight Mile Brook, Pictou County; Wallace, Cumberland County; and Marys Point, New Brunswick. Dark and light granites are identified at Quarry Lake, Halifax County, and Terence Bay, Halifax County. Colourful felsic breccias are described from Scatarie Island, Cape Breton County.

Nova Scotia building stone is available in many colours and textures for the restoration specialist and several sites of granitic rock are suitable for the manufacture of curbing stone, tile and cladding.



CHAPTER 1. INTRODUCTION

Nova Scotia has a rich history of Building Stone production which dates back to the earliest days of settlement. Local stone was used in the construction of the Halifax Citadel in the mid 18th Century. Scottish settlers in areas of Pictou, Colchester and Cumberland Counties used local sandstone for construction of buildings in the 18th and early 19th Centuries. In the mid 19th Century sandstone quarries in the Pictou area, Pictou County, and the famous Wallace Quarries, Cumberland County, exported large quantities of sandstone to Central Canada and New England for use in the construction of private residences, row houses and public buildings.

In recent years society has placed a greater emphasis on the preservation and restoration of historic buildings. Those constructed of stone require matching replacement stone or repairing stone. The only sandstone quarry operating intermittently in Nova Scotia at present is the Wallace Quarries Ltd. Quarry, Cumberland County. In response to an anticipated demand for stone colours other than the Wallace olive, the Building Stone Project was initiated to evaluate, map and inventory building stone quarries and prospects in Nova Scotia.

METHODOLOGY

The H. Fletcher and E. R. Faribault, Geological Survey of Canada, series of geological maps of Nova Scotia documented building stone quarries at the turn of the Century. Over 250 old quarries were documented on these maps; approximately 150 of these were located for this study. Additional quarries and occurrences, as described by Parks (1914) and Carr (1955), were located and significant ones were included in this report. In total 51 quarries or quarry prospects were mapped, described in detail and are included in this report. They are organized alphabetically by rock type, colour, county and quarry name (e.g. granite, grey, Halifax County, Kinsac Lake Quarry comes before granite, red, Inverness County, First Fork Brook Occurrence). When the quarry name does not delineate a place then a geographic location is given after the name (e.g. Queen Quarry, Purcells Cove). A list and location map of quarries and prospects discussed in this report are presented in Figure 1. It is organized alphabetically by county and quarry/occurrence name.

The most historically significant quarries and those with the greatest development potential were diamond drilled. Drill core was logged in detail looking at features such as bed height, colour and texture, type and colour of the cement in sandstones, presence of deleterious minerals, the quantity of waste rock overlying the usable beds and the frequency and attitude of joints and fractures. The drill logs are presented in Appendix 1.

Samples were taken from many of the quarry sites. Large blocks were recovered from several quarries for further evaluation. Specimens were sawn and polished and some samples are included in Nova Scotia Department of Mines and Energy (NSDME), Sample Catalogue 89-01. These are available for viewing at the Nova Scotia Department of Natural Resources Library in Halifax. They are listed in this report under the individual quarry writeups as Samples 1-11, NSDME Sample Catalogue 89-01. Other samples, including drill core, listed under the individual quarry writeups and in Appendix 2, are available for viewing by appointment at the Nova Scotia Department of Natural Resources Core Library in Debert, Colchester County.

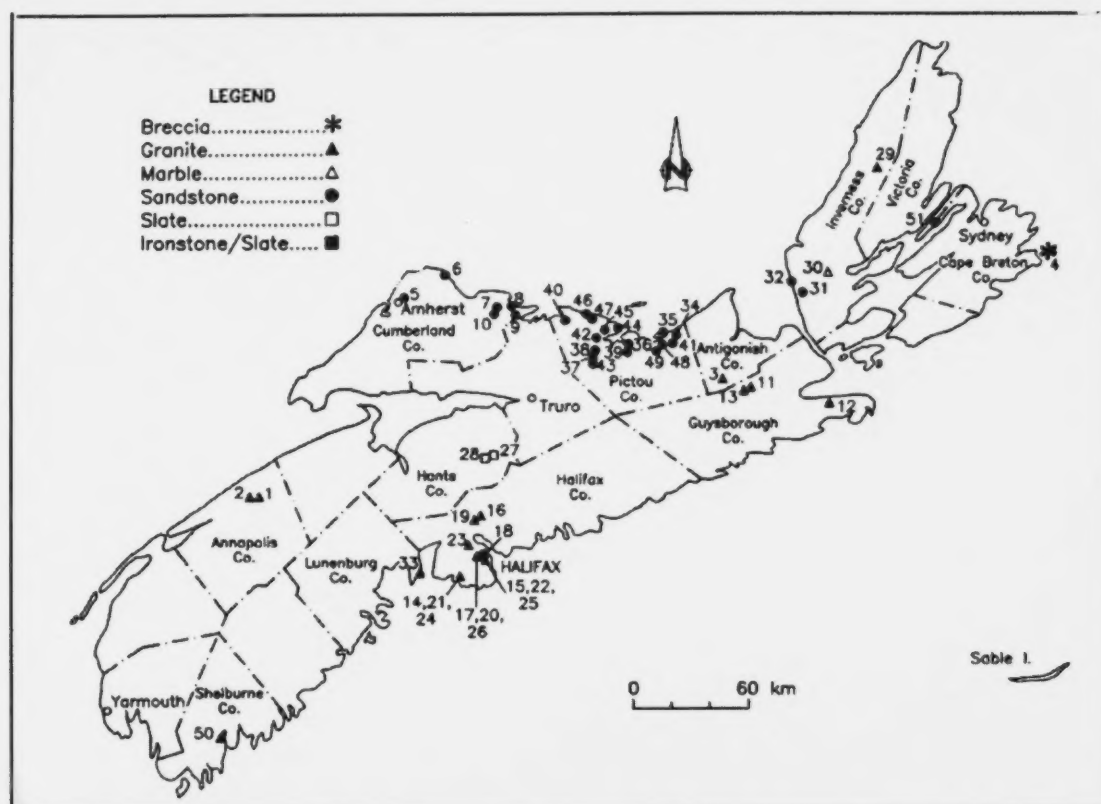
PHYSICAL PROPERTIES

The physical properties, as reported in the detailed quarry descriptions, were taken from Parks (1914). Values such as specific weight, absorption, compressive strength and transverse strength are reported.

FACTORS FOR BUILDING STONE

Factors which make a superior building stone today are not necessarily the same as those which made a suitable building stone in the past.

Today's building stone industry in North America and world wide is dominated by granitic rock types. Modern building construction methods use reinforced concrete, concrete blocks and bricks coupled with a curtain wall cladding system. The cladding panels typically measure 1 m x 1.5 m on each side and



ROCK TYPE	#	QUARRY	PAGE	ROCK TYPE	#	QUARRY	PAGE
ANNAPOLIS COUNTY				HANTS COUNTY			
▲	1	Heritage Memorials Ltd. Quarry	15	□	27	East Gore Slate Quarry	89
▲	2	Robert Baltzer Quarry	18	□	28	Upper Rawdon Slate Occurrence	90
ANTIGONISH COUNTY				INVERNESS COUNTY			
▲	3	South River Lake Quarry	9	▲	29	First Fork Brook Occurrence	35
CAPE BRETON COUNTY				△	30	Glencoe Marble Occurrence	46
*	4	Scatarie Island Occurrence	7	●	31	Graham River Quarry	88
CUMBERLAND COUNTY				●	32	McKays Point Occurrence	66
●	5	Amherst Redstone Quarry	82	LUNENBURG COUNTY			
●	6	Coldspring H. ad Quarry	85	▲	33	Aspotogan Quarry	32
●	7	Fred Mead Quarry	68	PICTOU COUNTY			
●	8	Wallace Quarries Ltd. Quarry	77	●	34	Barneys River Quarry	53
●	9	Wallace Ridge Quarry	69	●	35	Big Merigomish Island Quarries	49
●	10	Wallace River Quarries	70	●	36	Eagle Quarry	71
GUYSBOROUGH COUNTY				●	37	Elliot's Quarry	72
▲	11	Arsenault Quarry	11	●	38	Four Mile Brook Quarry	54
▲	12	Queensport Quarry	20	●	39	Gammon and Weir Quarry	55
▲	13	West Erinville Quarry	14	●	40	Hines Quarry	86
HALIFAX COUNTY				●	41	Huggans Brook Quarry	73
▲	14	Brookfield Quarry	37	●	42	MacKenzie Quarry	56
▲	15	Couglan Quarry	22	●	43	MacPherson Quarry	74
▲	16	Fletchers Lake Quarry	23	●	44	McKeens Quarry	59
▲	17	Granite Quarry	24	●	45	Sawmill Brook Quarry	63
■	18	King Quarry	45	●	46	Seafoam Quarries	50
▲	19	Kinsac Lake Quarry	25	●	47	Toney River Quarry	51
▲	20	Kline Quarry	26	●	48	West Branch French River Quarry 1	87
▲	21	Little Lake Occurrence	39	●	49	West Branch French River Quarry 2	52
▲	22	Purcells Cove Quarry	27	SHELBURNE COUNTY			
▲	23	Quarry Lake Quarry	28	▲	50	Shelburne Island Park Quarry	33
▲	24	Quarry Lake Granite Quarry	42	VICTORIA COUNTY			
▲	25	Queen Quarry	30	●	51	Grant Quarry	67
▲	26	Yeadon Quarry	31				

Figure 1. Location map for building stone quarries and occurrences throughout the Province of Nova Scotia.

1.5 cm in thickness. The exterior surface of the panels may be polished, flamed or abraded to achieve the desired texture. Modern stone cutting and polishing techniques use raw stone blocks which weigh up to 20 t and measure 1.5 m x 2 m x 3 m in size. Blocks this size generate minimal waste in the manufacturing process. Panel size and thickness have limited stone choices to granite and marble.

Building construction in North America in the 18th, 19th and early 20th Centuries used building stone for the construction of load-bearing walls. Stone backed by brick formed the structures of the buildings. Individual block sizes were generally in the 1/8-1/4 m³ range. Sandstone, limestone and marble were the materials of choice of the day because of the warm, earth tone colours and ease with which they could be worked. Granites were also used, but were generally unpolished.

Stone extracted for use in the restoration of buildings has a much different set of criteria than stone extracted for the construction of modern buildings. For restoration purposes, colour, texture, bed heights and the absence of deleterious materials are the most significant factors. Often, if stone is not available from the original quarry, a suitable matching replacement can be found.

HISTORICAL USE OF NOVA SCOTIA BUILDING STONE

Sandstone was the predominant building stone quarried in Nova Scotia over the last 200 years. Buff, olive and tan coloured sandstone were quarried near Pictou and New Glasgow, Pictou County; Tatamagouche, Colchester County; and Wallace, Cumberland County. Striking grey sandstone was also quarried near New Glasgow and Wallace.

A very popular red sandstone was quarried in Amherst, Cumberland County, for many years. Several historically important buildings in the region were constructed of these materials. Province House was built of Wallace sandstone. The Halifax Armouries was constructed of Amherst red sandstone. Pictou sandstones were used to construct the New Glasgow Post Office. Scores of other buildings throughout the Maritimes, Quebec, Ontario and New England remain as monuments to Nova Scotia sandstone.

Past granite production was centred in the Halifax area with supplementary activity in the Nictaux, Annapolis County, and Shelburne, Shelburne County, areas. Halifax granites are found as basement courses in many of the sandstone buildings in Halifax. One of the better granites, from the Brookfield Quarry, Terence Bay, Halifax County, can be seen on the Merrill Lynch building in downtown Halifax. The majority of granite quarried in Nova Scotia was used in the monument trade. The small blocks available in the old quarries combined with older manufacturing methods restricted the granites use to the higher value grave marker and monument business.

NOVA SCOTIA STONE FOR RESTORATION

A number of building restoration projects have been carried out over the last decade in Nova Scotia and elsewhere. One of the most significant was the restoration of Province House in Halifax. Originally constructed of Wallace olive sandstone, the effects of 200 years of smoke and the elements required that the building be cleaned, repaired and restored. The details of this work are outlined in Appendix 3, written by Les Batten of Maritime Canstone Inc. The required replacement stone was quarried from the present Wallace Quarries Ltd. Quarry, Cumberland County, which is located approximately 4 km north of the old quarry which supplied the original stone.

The restoration of the Art Gallery of Nova Scotia, formerly the Dominion Building, was completed in 1989. Research revealed that the original Dominion Building was constructed of brown sandstone quarried at Marys Point, New Brunswick (Appendix 4). This particular stone was of a colour and texture unlike any of the Nova Scotia sandstone quarries. In this case, the old Marys Point Quarries were reopened for a short period of time and the stone necessary for the Art Gallery Restoration was removed.

The Peace Tower and Centre Block of the Parliament Buildings in Ottawa were constructed of Napean, Ontario, sandstone and trimmed with Wallace sandstone. Ongoing restoration and maintenance of these buildings has provided a continuing market for Wallace sandstone.

REGIONAL GEOLOGY

The geology of Nova Scotia is diverse and provides a wide variety of igneous, metamorphic and sedimentary terranes in which to explore for and develop building stone quarries. The central mainland core is composed of greywackes and slates of the Meguma Group. These rocks have been used in the Halifax area for construction for over 200 years. Due to the high pyrite content, these rocks are locally known as 'ironstones'. Various granitoids of the South Mountain Batholith intruded these rocks. Granodiorites and monzogranites have also been quarried and used in the Halifax area as building stones and for monument work. A fine grained, biotite granite quarried at Nictaux, Annapolis County, has been a very popular ornamental stone for over 100 years.

The Carboniferous sedimentary rocks of the Cumberland Basin have been quarried extensively over the last 175 years. In fact over 50 old quarries were active between Amherst, Cumberland County, in the west and Pomquet, Antigonish County, in the east. Sandstone quarries are also known in the Carboniferous sandstones of Cape Breton Island.

This paper reports in detail the results of the Building Stone Project (1984-1989) and is a compilation of information collected from quarry site visits, literature research and detailed diamond drilling of several old quarries and prospects. Possible uses for the stone at each of the sites are listed. These include monuments, tiles, rubble stone, decorative chips and ashlar. Appendix 5 is a glossary of building stone terms as well as some of the technical terms used in Appendix 3 which discusses restoration. The final section of each detailed description is Comments which gives the author's opinion of the potential for development of that particular site. This information, coupled with the Nova Scotia Sample Catalogue 89-01 (Nova Scotia Department of Mines and Energy, 1989) and the Building Stone in Nova Scotia pamphlet (Dickie, 1988, 1991, 1993), provides an accurate information base for the building stone industry of today. It will be of help to the restoration expert who is looking for a specific stone type and the entrepreneur who is looking for a suitable granite deposit for the manufacture of curbing stone, tile and cladding.

CHAPTER 2.

BUILDING STONE QUARRY AND OCCURRENCE DESCRIPTIONS

Commercial Stone Name: BRECCIA, RED AND GREEN
County: CAPE BRETON
Property Name: SCATARIE ISLAND OCCURRENCE

NTS: 11J/04

Longitude: 59°40'00"

Latitude: 46°20'00"

Sample Number: 86-01-28 Box 3

Date: September 24, 1986

Property Status: Undeveloped

Geological Rock Name: Felsite breccia

Possible Uses: Decorative chips

Grain Size: Medium to coarse; variable

Texture: Breccia; variable

Fabric: No

Bedding: Strike 140°, Dip 41°NE; thickness range 5-20 m in sediments

Jointing: Irregular; intensive

Potential Quarry Block Size: 12 m x 1 m x 20 cm

Outcrop Exposure: Good

Use of Explosives: No

Location Description: Outcrops are located on the western side of Tin Cove west to Ragged Rocks Cove on the southern side of Scatarie Island and on the northern shore between Western Point Cove and Savage Cove (Fig. 2).

Production History: None

Colour: Fresh red and green; weathered dark green and red; variable

Mineralogy: The mineralogy is well described by Parks (1914). He stated, "The matrix of all these stones consists of a hard volcanic glass in which minute crystals have been developed by secondary crystallization (devitrification). Scattered through the glassy matrix are larger crystals of orthoclase and some quartz still in a good state of preservation. The colour of this matrix varies from a very light tint to a deep purplish red or to vivid green. The rock is

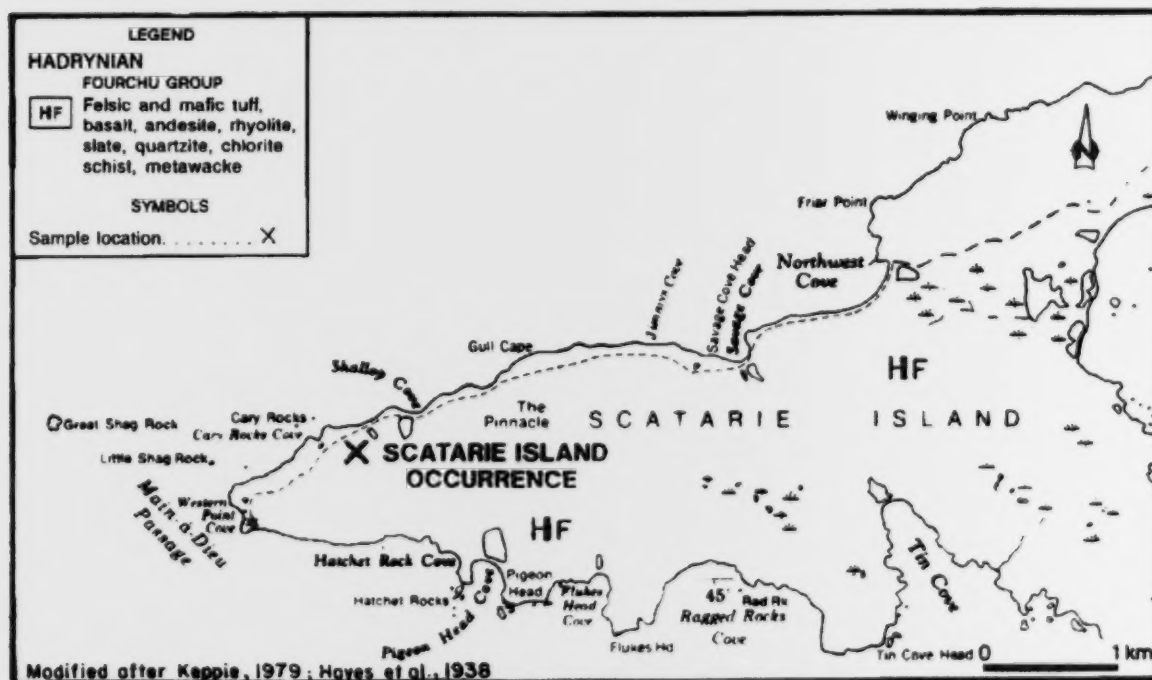


Figure 2. Geological location map for the Scatarie Island occurrence, Cape Breton County (11J/04).

therefore to be regarded as a devitrified rhyolite, and is generally referred to as felsite although this latter term is sometimes applied to dyke rocks having the general chemical nature of granite. Many of the examples collected are therefore red or green felsites of considerable beauty. More striking however are those varieties which have arisen by the breaking up of the original felsites and the cementation of the resulting fragments in fresh flows of lava (felsite breccia). It is evident therefore that two general types of these breccias may occur: red fragments in a green matrix and green fragments in a red matrix. It is also evident that all sorts of fragments may mingle in a single example; in consequence, the actual varieties are almost as many as the pebbles, and are much too numerous to justify a description of each. Typical red and green felsite breccias from Scatari (sic) are shown in Plates XLI and XLII. The considerable beauty of these rocks, in some cases is further enhanced by the occurrence of secondary stringers and blotches of milk white quartz."

Deleterious Minerals: Interbedded sediments

Other Features: Felsic volcanic breccia is extremely hard due to the high silica content.

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: Parks (1914) ranked the Scatarie Island breccias highly. He stated, "The felsite-breccias, near the west light of Scatari (sic), yield a great variety of bright coloured pebbles, and a polished block is on exhibition at the Provincial Museum, Halifax. But the planes of joints and cleavage, combined with those of bedding, break the rock, and apparently render it unfit for the uses to which, on account of its great beauty, it might otherwise be applied". Immediately at the western light is an unattractive dark grey rock with bands of dull coloured reddish felsite. Proceeding eastward along the northern shore, are handsome felsite-breccias, striking a little north of east and dipping either vertically or at a high angle to the north. In many places the stone is very thinly bedded, but in other parts the width of the individual beds is much greater. The nonbrecciated portions occur in bands sometimes 3 m thick, of a dark chocolate

colour, which graduates into a much lighter colour, of no particular beauty, and which weathers more rapidly to a dull white. Interbanded with the felsites are belts of brightly coloured breccias of considerable beauty. While the varieties of these rocks are innumerable, they may be regarded as belonging to two general types: one with a red base and the other with a green base. Besides the variations in colour, the grain of the rock shows transitions from very coarse to very fine. In places, narrow red bands appear which are almost jaspery in colour and hardness. These rocks continue for 1.6 km along the shore and outcrop at intervals beyond Savage Cove. The whole of the coast is strewn with a wonderful profusion of varicoloured pebbles which, when wet, present a most extraordinary display of colour.

On the southwestern end of the coast, the rock first encountered is light in colour and schistose in structure; farther east, light coloured greenish and reddish felsites and felsite-breccias occupy the coast. While constituting beautiful rocks in themselves they are pale and unattractive when compared with the highly coloured examples from the northern shore.

All the rock is thinly bedded and is cut by numerous joints in a north-south direction. In places these joints are so close together that the stone is reduced to small angular fragments. There are, however, many places where much larger material could be obtained, but I think that blocks 0.2 m² would be the maximum size possible from the surface rock. This coast is exposed to violent storms, so that it is reasonable to believe that surface agents have had much to do with the shattering of the stone. While it would be unwise to hold out any hope for the economic extraction of large blocks suitable for panelling, there is no doubt that pieces of sufficient size could be obtained for the manufacture of clock cases, bases of statuettes, tiles for fireplaces, and for numerous other purposes of a similar kind. It must not be overlooked also that a great deal of waste would be entailed in the production of marketable material and that the product could not be cheaply placed on the market. The hardness, the susceptibility to polishing, and the extraordinary beauty of the stone, however, should more than balance the considerable cost of production. The amount available is enormous.

Commercial Stone Name: GRANITE, BLACK
County: ANTIGONISH
Property Name: SOUTH RIVER LAKE QUARRY

NTS: 11F/05

Longitude: 61°56'04"

Latitude: 45°25'45"

Sample Number: Not sampled

Date: September 28, 1988

Property Status: Abandoned

Geological Rock Name: Gabbro

Possible Uses: Rubble stone, tiles, possibly monuments

Potential Quarry Block Size: 1 m x 1 m x 50 cm

Outcrop Exposure: Fair to good

Use of Explosives: Black powder

Mineralogy: Medium grained, equigranular pyroxene gabbro. Stone is fresh and contains small amounts of pyrite and pyrrhotite

Deleterious Minerals: Pyrite, pyrrhotite, serpentine

Location Description: The old South River Lake Quarry is located on McNaughton Brook, west of Route 316 at South River Lake (Fig. 3).

Production History: A small amount of stone was taken from this Quarry in the mid 1930s and used for monuments in Sydney, Nova Scotia.

Colour: Black

Grain Size: Fine to medium; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Irregular; moderate to intensive

Drilling Details: One hole SRL-89-01 (Appendix 1, p. 130) was collared on the southern side of McNaughton Brook 15 m west of Route 316 (Fig. 4). The hole was vertical and drilled to a depth of 59.1 m. The gabbro is characterized by abundant serpentine veins and associated alteration.

Physical Properties: n/a

Comments: The old South River Lake Quarry is presently overgrown. It occupies a 10 m deep gorge that McNaughton Brook flows through. All that remains is an outcrop face 7 m high and a waste pile and cables which at one time supported a stiff leg derrick. Although the stone exposed in the Quarry is

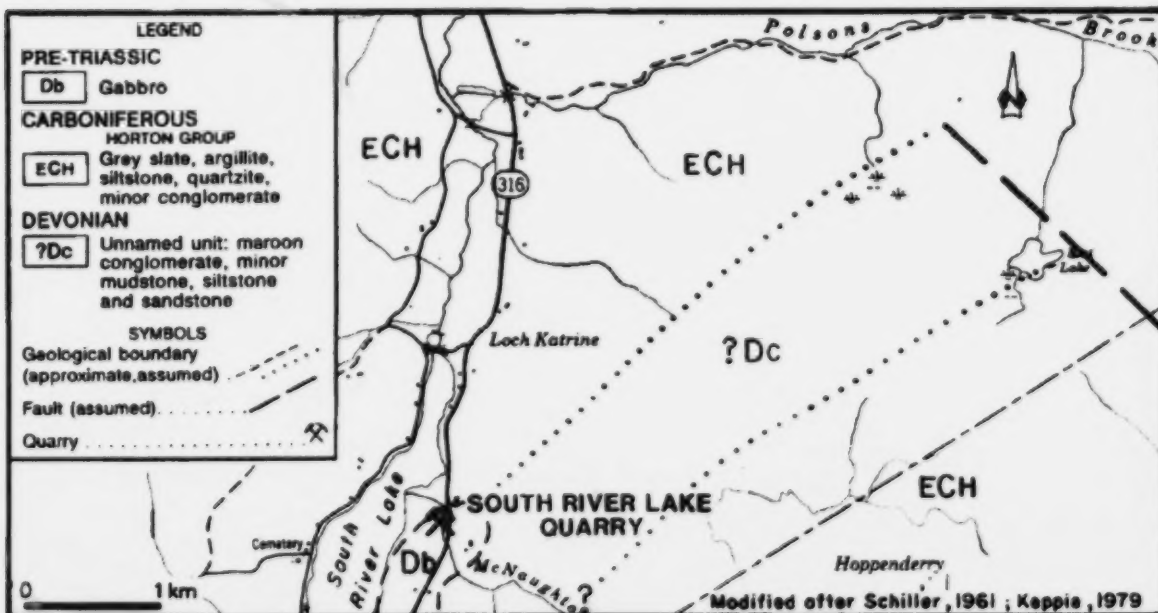


Figure 3. Geological location map for the South River Lake Quarry, Antigonish County (11F/05).

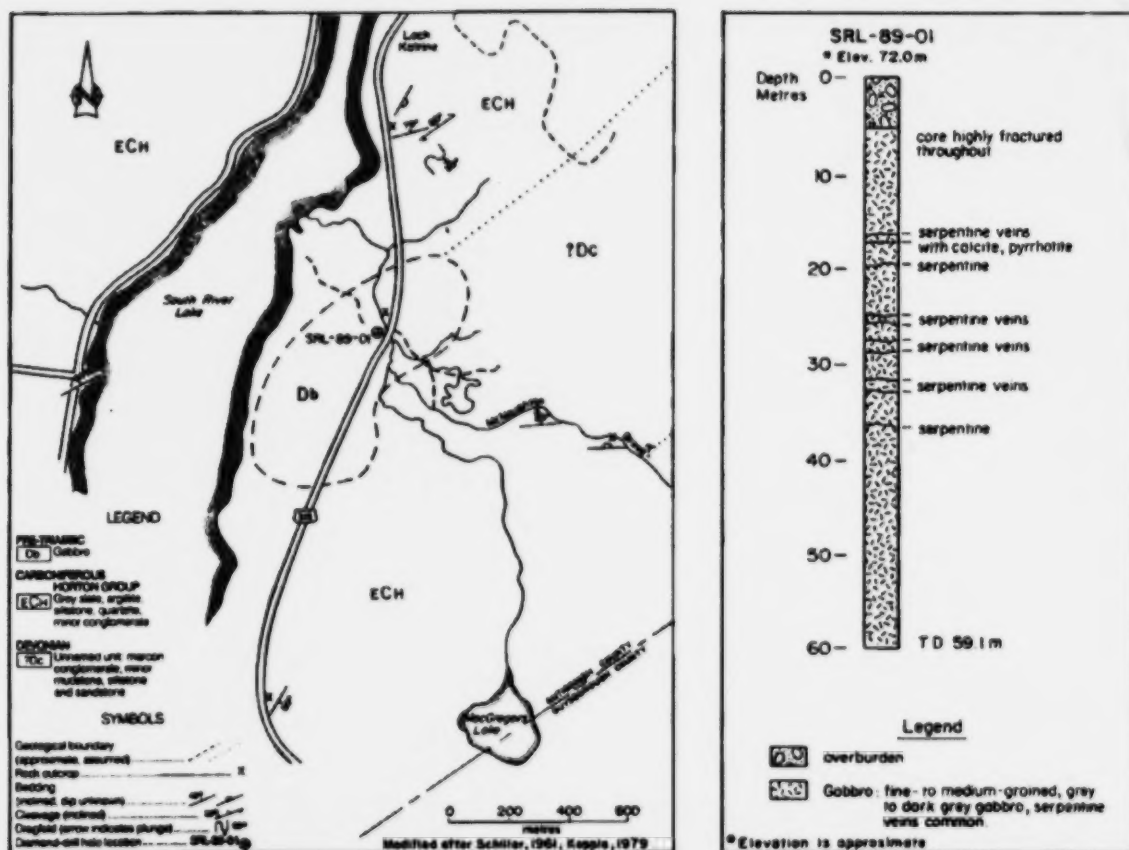


Figure 4. South River Lake, Antigonish County, diamond-drill hole location map (not surveyed) and diamond-drill hole column for SRL-89-01 (11F/05).

excellent quality, the rock cored in the drillhole within 50 m was highly altered and veined. Therefore the available tonnage of good stone would be very limited.

Commercial Stone Name: GRANITE, BLACK (DAWN BLACK)

County: GUYSBOROUGH

Property Name: ARSENAULT QUARRY, WEST ERINVILLE

NTS: 11F/05

Longitude: 61°46'15"

Latitude: 45°23'50"

Sample Number: ERV-88-04 Box 2; Sample 6,
NSDME Sample Catalogue 89-01

Date: September 28, 1988

Property Status: Dormant

Geological Rock Name: Gabbro

Possible Uses: Monuments, tiles

Colour: Fresh black to dark grey; weathered dark grey; uniform

Grain Size: Fine to medium; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Regular to irregular; moderate to intensive

Grain: Strike 0°, Dip 63°W; spacing 30 cm-1 m

Rift: Strike 106°, Dip 70°N

Hardway: Strike 56°, Dip 38°SE

Potential Quarry Block Size: 1 m x 2 m x 60 cm

Outcrop Exposure: Good

Use of Explosives: Black powder

Location Description: An opening has been made 500 m east of the northeastern corner of Kellys Lake at West Erinville. Access is provided via a gravel road along the western side of Salmon River 1.2 km northwest of West Erinville (Fig. 5).

Mineralogy: Pyroxene gabbro. Grains of pyroxene up to 4 mm long with grains of plagioclase of the same size with a finer grained matrix of similar composition

Production History: The first attempts at quarrying were made here in the mid 1930s by a monument maker from Sydney, Nova Scotia. Several hundred tonnes were again removed by Arsenault Monuments Ltd., Antigonish, in 1960. No stone has been quarried since that time.

Deleterious Minerals: Pyrite and pyrrhotite

Other Features: The majority of stone exposed in the Quarry is medium grained, dark gabbro, however

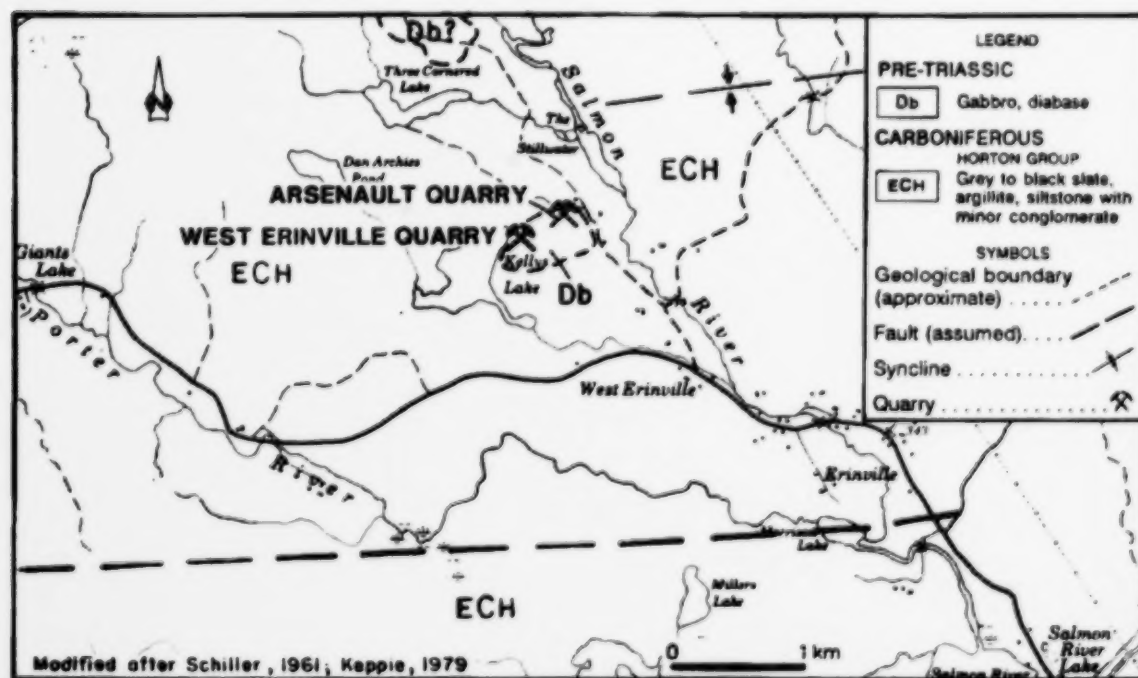


Figure 5. Geological location map for the Arsenault and West Erinville Quarries, Guysborough County (11F/05).

sheets of fine grained, black gabbro cut the main mass parallel to the grain.

Diamond Drilling Details: Two holes, ERV-88-01 and ERV-88-04, were collared in the old Quarry (Figs. 6 and 7; Appendix 1, p. 109). The first, NQ size, was drilled vertically to a depth of 62.5 m. The second, HQ size, was collared in the same location and also drilled to 62.5 m. The large core was drilled to obtain samples for testing.

Physical Properties: n/a

Comments: The old Quarry consists of two openings just south of a small brook. The Quarry is on a sloping, rocky outcrop. It is 25 m in diameter with two holes 5-7 m deep. The most recent Quarry is 10 m south of the old workings which followed a notch eroded into the bedrock. A large volume of stone remains in the waste piles and the quarrying seems to have been done in a haphazard fashion. Due to the high joint frequency, it is very difficult to quarry blocks larger than about 1 t in size. Drilling results indicate that certain zones at depth may have a more favourable joint pattern and further exploration is warranted.

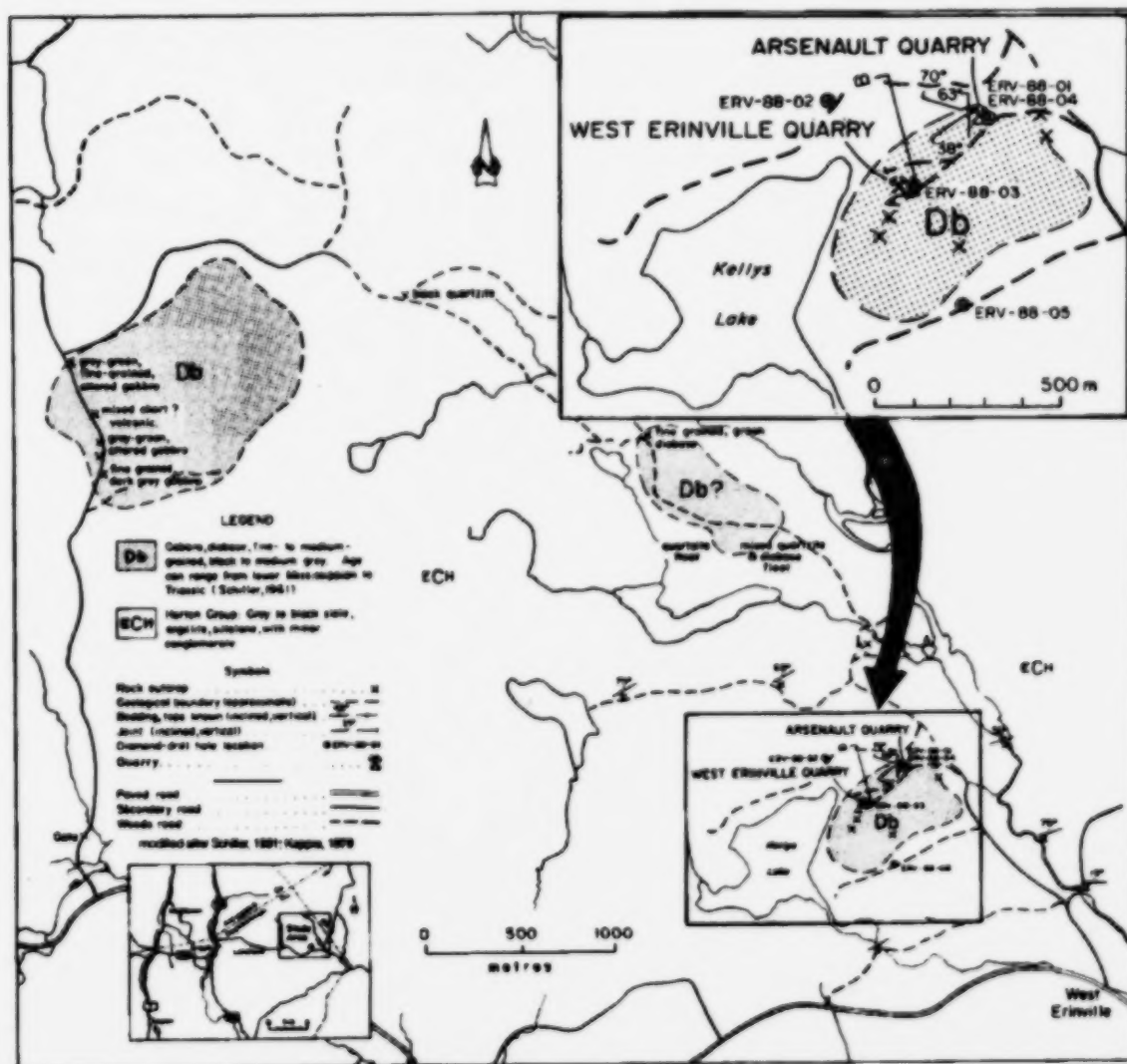


Figure 6. Arsenault and West Erinville Quarries, Guysborough County, geological map and diamond-drill hole locations (not surveyed) (ERV-88-01 to ERV-88-05) (11F/05).

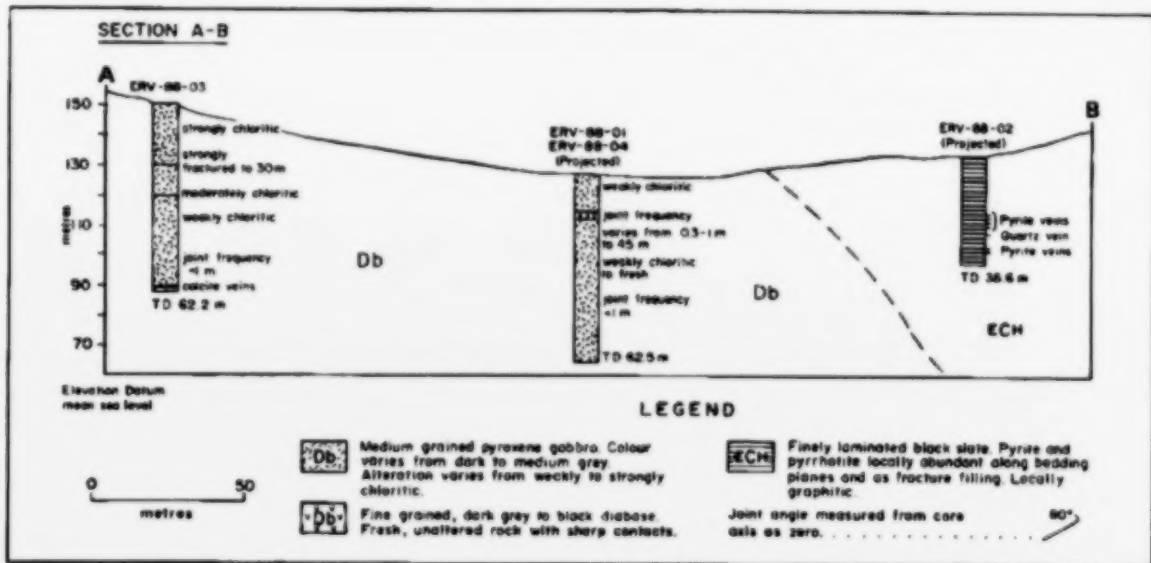


Figure 7. Arsenault and West Erinville Quarries, Guysborough County, geological columns of ERV-88-01 to ERV-88-04 (Section A-B). See Figure 6 for locations.

Commercial Stone Name: GRANITE BLACK
County: GUYSBOROUGH
Property Name: WEST ERINVILLE QUARRY

NTS: 11F/05

Longitude: 61°46'34"

Latitude: 45°23'48"

Sample Number: Not sampled

Date: September 28, 1988

Property Status: Abandoned

Geological Rock Name: Gabbro

Possible Uses: None

Location Description: The West Erinville Quarry is located 100 m east of the northeastern corner of Kellys Lake, West Erinville (Fig. 5, p. 11). It is accessed by a woods road that leads west from the Arsenault Quarry.

Production History: The Arsenaults opened this Quarry in the early 1960s, however, due to the poor quality of the stone, no usable stone was ever extracted.

Colour: Fresh dark grey green; weathered green; variable

Grain Size: Medium; uniform

Texture: Equigranular; variable

Fabric: No

Bedding: No

Jointing: Irregular; moderate to intensive

Potential Quarry Block Size: 1 m x 1 m x 60 cm

Outcrop Exposure: Good

Use of Explosives: Black powder

Mineralogy: Fine- to medium-grained pyroxene gabbro. Pyroxene completely chloritized producing a brown ochre stain.

Deleterious Minerals: Chlorite alteration

Diamond Drilling Details: Drillhole ERV-88-3 was collared just east of the Quarry and drilled vertically to a depth of 62.2 m (Figs. 6 and 7). Gabbro is strongly chloritized to 30 m depth and strongly fractured.

Physical Properties: n/a

Comments: An opening was made on a rocky hillside about 25 m above the base level by Phillip Arsenault in the early 1960s. He stated that no stone of any value was quarried. The hole is 10 m by 5 m and 7 m deep. Extensive jointing and fracturing plus the strong chloritic alteration make further quarry development impossible.

Commercial Stone Name: GRANITE, BLUE (ATLANTIC MIST GREY)
County: ANNAPOLIS
Property Name: HERITAGE MEMORIALS LTD. QUARRY
 NICTAUX

NTS: 21A/14

Longitude: 65°05'28"

Latitude: 44°54'02"

Sample Number: Sample 8, NSDME Sample Catalogue 89-01

Date: August 13, 1986

Property Status: Active

Geological Rock Name: Biotite granodiorite

Possible Uses: Monuments, tiles

Location Description: The Heritage Memorials Ltd. Quarry is located 1 km southwest of Nictaux West on the southern side of Route 201 (Figs. 8 and 9). The present Quarry is part of the old Nixon Granite Quarry as described by Carr (1955).

Production History: Quarrying began in the Nictaux area in 1889, and three quarries were in production at the time of Parks (1914). Later Carr (1955) stated that two companies, Nixon Granite Works and Gehue's

Granite Works, were in production. At present, Heritage Memorials Ltd. quarries 2000 t per year to provide monument blanks and bases for their monument business in Windsor.

Colour: Fresh blue grey; weathered grey; uniform

Grain Size: Fine to medium; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Regular to irregular; moderate to intensive

Sheeting: Strike 8°, Dip 3°W; spacing 1-2 m

Rift: Strike 80°, Dip 80°S; spacing irregular

Hardway: Strike 144°, Dip 74°E; spacing irregular

Potential Quarry Block Size: 2 m x 1 m x 1 m

Outcrop Exposure: Good

Use of Explosives: Black powder

Mineralogy: Fine grained, equigranular biotite granodiorite, plagioclase 55%, biotite 15%, quartz 30%

Deleterious Minerals: Xenoliths of black slate

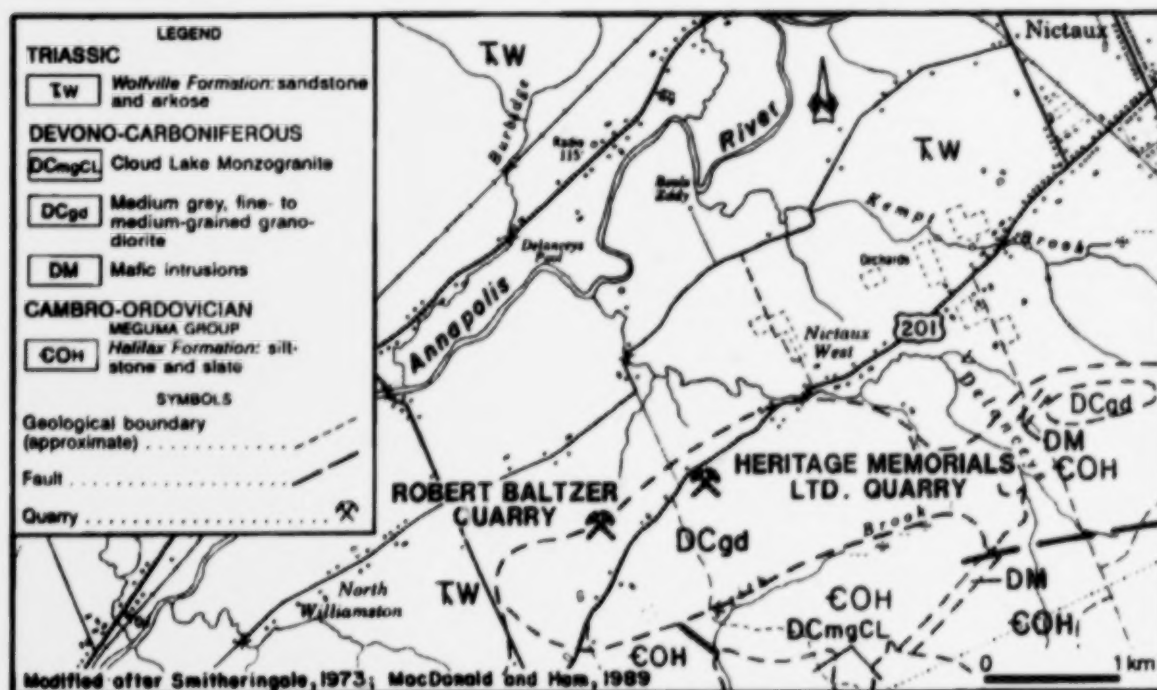


Figure 8. Geological location map for the Heritage Memorials Ltd. and Robert Baltzer Quarries, Annapolis County (21A/14).

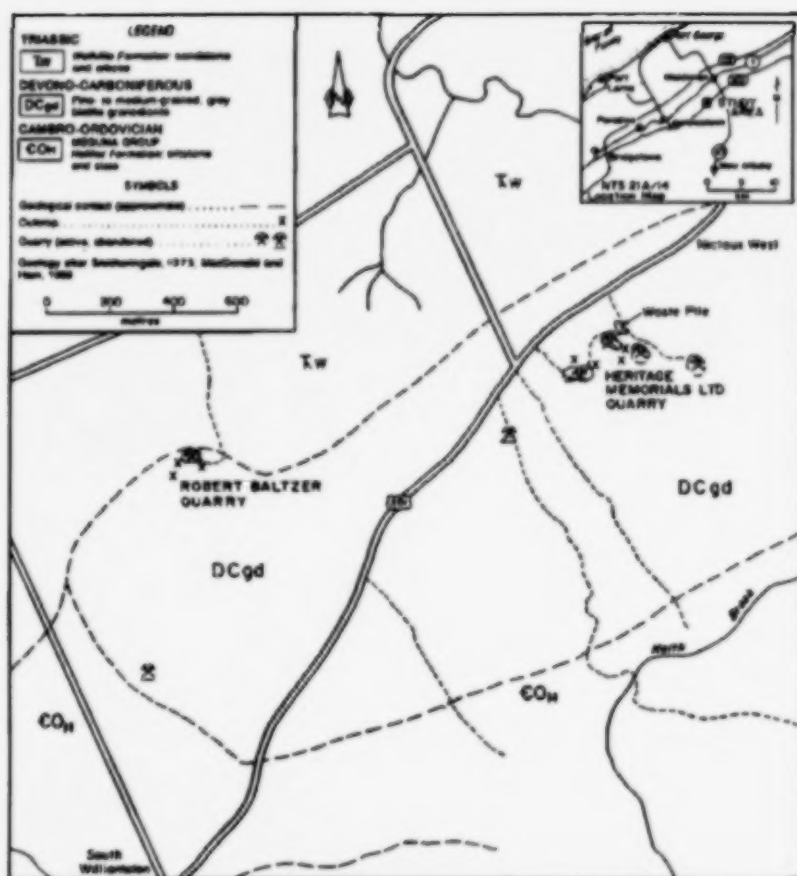


Figure 9. General geology and detailed locations of Heritage Memorials Ltd. and Robert Baltzer Quarries, Annapolis County (21A/14).

Other Features: The granodiorite is cut by numerous quartz veins (streaks) which are up to 5 mm wide. Also present are narrow aplite and pegmatite dykes.

Diamond Drilling Details: Three holes totalling 116.8 m were drilled by the Nova Scotia Department of Mines and Energy in February 1989 (NTX-89-01 to NTX-89-03; Appendix 1, p. 121). The holes were

collared up to 300 m apart in three old quarry workings (Fig. 10). The two western holes cut fresh blue-grey, fine- to medium-grained granodiorite similar to the Quarry exposures. The eastern hole cuts hydrothermally altered rock which contains abundant quartz-feldspar dykes and quartz veins. The fracture density did not diminish with depth so the problems associated with high joint frequency at surface will remain as the quarry is worked to greater depths.

Physical Properties: (Parks, 1914): Specific weight 167.628 lbs/ft³, Absorption 0.137%, Compressive strength 34,058 lbs/in², Transverse strength 3,572 lbs/in²

Comments: The present Quarry is operated only 8-10 weeks of the year by personnel who travel from the Heritage Memorials plant in Windsor. They quarry only enough stone to meet their own requirements for monument blanks and bases. The combination of quartz and pegmatite veins coupled with the erratic joint pattern make the quarrying of large blocks very difficult. Also the presence of abundant xenoliths results in a high waste factor when the blocks are cut. It is possible, that as the waste factor increases, a point will eventually be reached where it will be less expensive to purchase stone from outside the Province than to quarry at Nictaux.

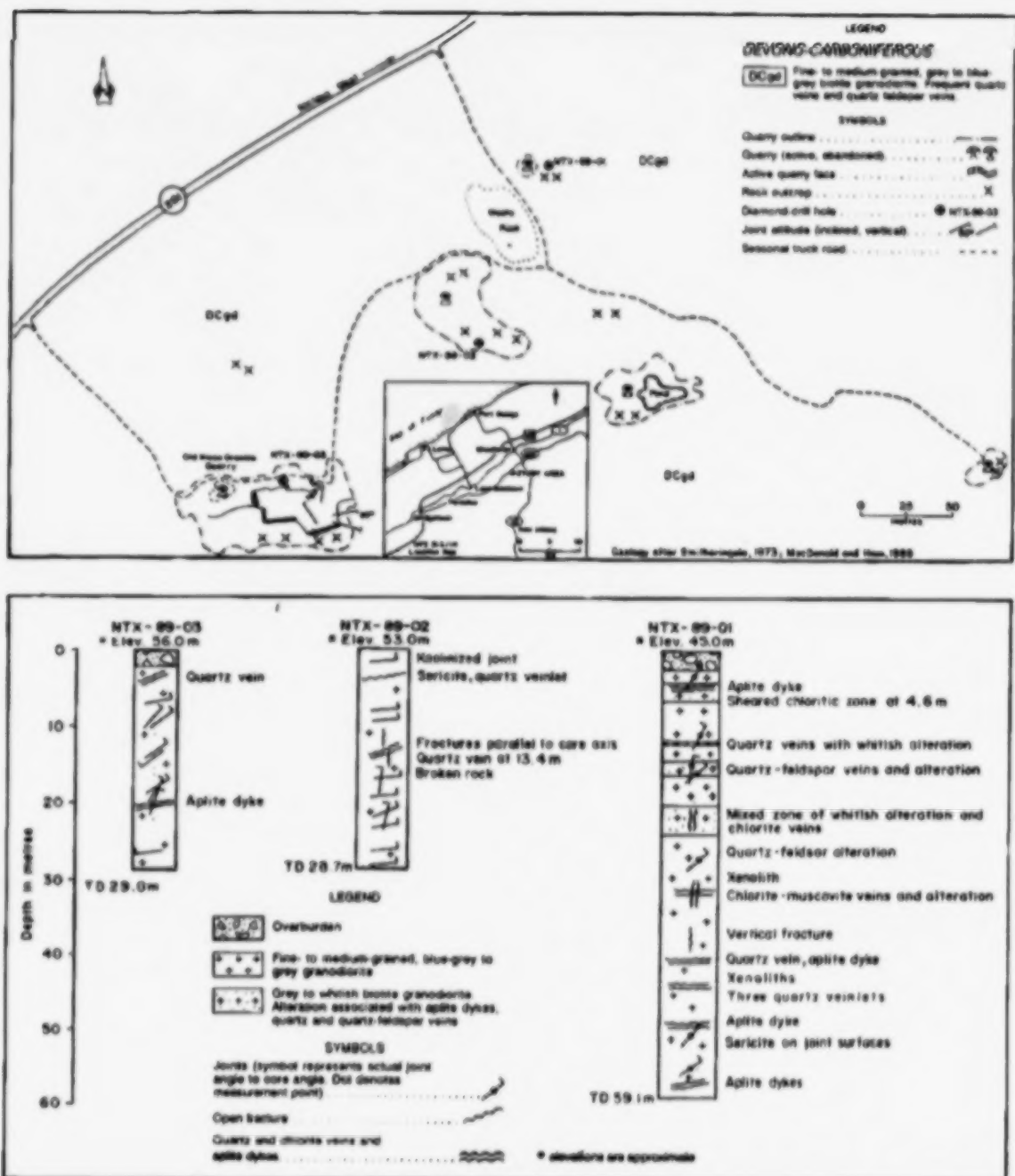


Figure 10. Heritage Memorials Ltd. Quarry, Nictaux, Annapolis County, diamond-drill hole locations (not surveyed) and schematic columns (NTX-89-01 to NTX-89-03) (21A/14).

Commercial Stone Name: GRANITE, BLUE
County: ANNAPOLIS
Property Name: ROBERT BALTZER QUARRY,
SOUTH WILLIAMSTON

NTS: 21A/14

Longitude: 65°06'38"

Latitude: 44°53'49"

Sample Number: Drill core SWN-89-01

Date: March 1989

Property Status: Prospect

Geological Rock Name: Biotite granodiorite

Possible Uses: Monuments?, tiles

Location Description: This quarry prospect is located on the farm of Robert Baltzer, 1.3 km southwest of the Heritage Memorials Ltd. Quarry (Figs. 8, p. 15; and 9, p. 16). Access is provided by a road south from the Baltzer house 550 m to the site.

Production History: A test pit was excavated in July 1988 by Robert Baltzer and a face about 15 m long and 7 m high was exposed. No commercial production has taken place.

Colour: Fresh blue grey; weathered grey; uniform; variable

Grain Size: Fine to medium; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Irregular; moderate to intensive

Potential Quarry Block Size: 1 m x 1 m x 50 cm

Outcrop Exposure: Fair to good

Use of Explosives: Black powder

Mineralogy: Fine- to medium-grained, equigranular biotite granodiorite, plagioclase 50%, biotite 15%, quartz 35%

Deleterious Minerals: Xenoliths and quartz veins

Other Features: Numerous quartz and quartz/feldspar veins cut the granite at random angles.

Diamond Drilling Details: Three holes totalling 62 m were drilled on the property (SWN-89-01 to SWN-89-03; Appendix 1, p. 131). All were vertical and varied from 15.8-26.4 m in depth. They were spaced at 15 m intervals and were located just south of the face of the exploration quarry (Fig. 11). The two eastern holes intersected typical fine- to medium-grained biotite granodiorite similar to the rock in the Heritage Memorials Ltd. Quarry. Fracture density was also similar to the rock in the Heritage Quarry. The most westerly hole intersected either a contact zone or a major fault zone because the core was strongly hematized, chloritized and fractured. In order to determine the size of the fault zone some trenching would be required.

Physical Properties: n/a

Comments: This prospect contains rock similar to the Heritage Memorials Ltd. Quarry. Outcrop exposure suggests that the fracture and joint density is no less than in the Heritage Quarry. Although the stone has a pleasing colour in the vicinity of the test pit, the waste factor may be extremely high in a quarry operation in this location. The same problems with xenoliths and quartz veins which occur at the Heritage Memorials Ltd. Quarry also exist at this location.

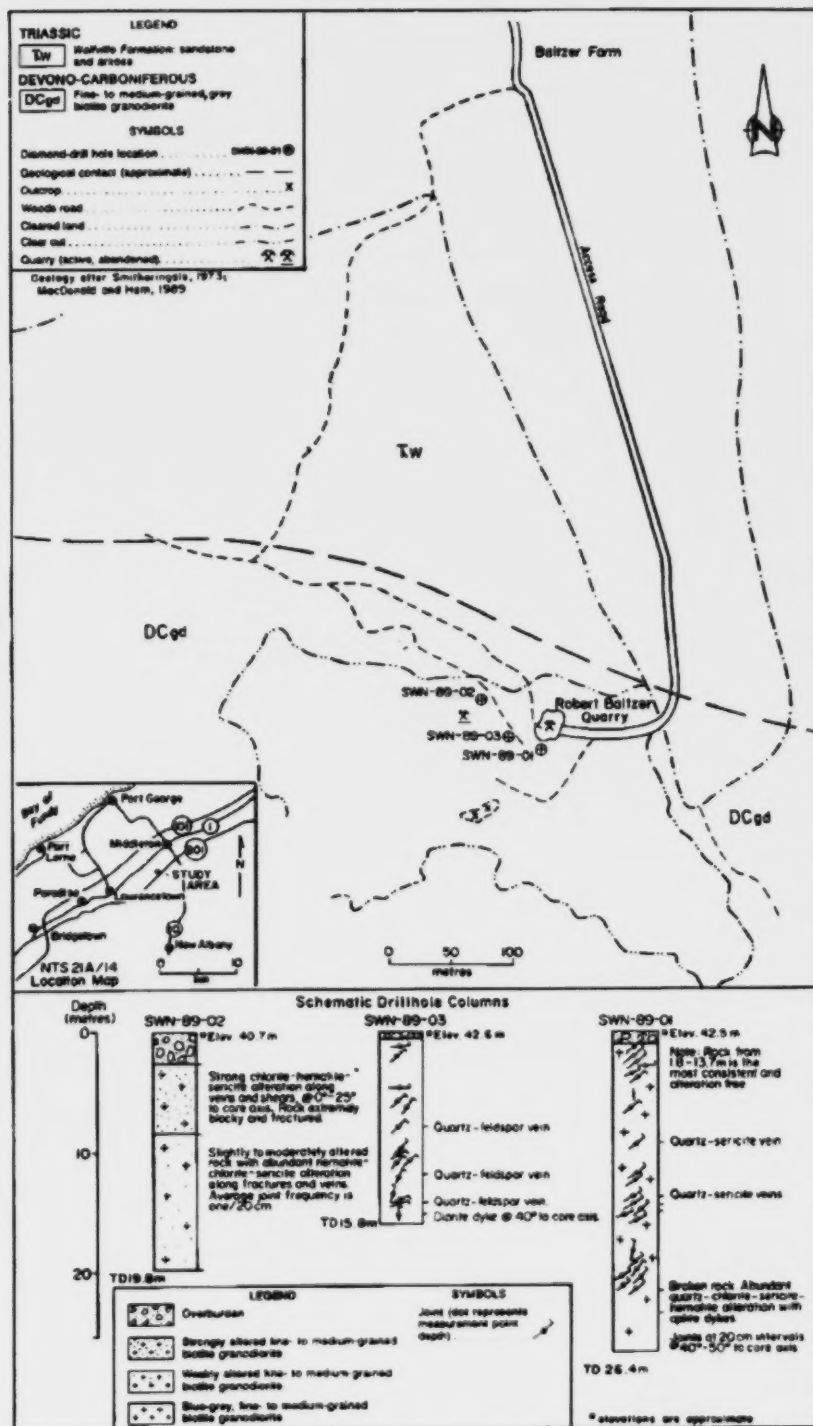


Figure 11. Robert Baltzer Quarry, South Williamston, Annapolis County, diamond-drill hole locations (not surveyed) and columns (SWN-89-01 to SWN-89-03) (NTS 21A/14).

Commercial Stone Name: GRANITE, GREY
County: GUYSBOROUGH
Property Name: QUEENSPORT QUARRY

NTS: 11F/06

Longitude: 61°15'54"

Latitude: 45°20'00"

Sample Number: 86-01-14, Box 1

Date: August 27, 1986

Property Status: Abandoned

Geological Rock Name: Granite

Possible Uses: Quarry 1: monuments, tiles, ashlar, rubble stone; Quarry 2: monuments(?), rubble stone, armour stone

Location Description: Two quarries were worked at Queensport (Carr, 1955). The first is 61 m above sea level, 1.5 km southwest of the bridge at Queensport. Access is via an old road from the gravel pit marked on the topographic sheet. It is 1.2 km by road from the edge of the gravel pit. The second quarry is on the western side of the road 540 m north of the first (Fig. 12).

Production History: According to a local man, Mr. Jamieson, who worked in the Quarry as a young man,

two men from Sydney, Nova Scotia, began quarrying stone some time after 1900. It ran until 1935 when the owner died. The Quarry was recently acquired by Dauphinee's of Shelburne, although there has been no production since 1935.

Quarry 1

Colour: Fresh yellowish grey; weathered dark grey; uniform

Grain Size: Fine to medium; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Regular; moderate

Grain: Dip horizontal; spacing 1 m

Rift: Strike 144°, Dip vertical; spacing wide

Hardway: Strike 39°, Dip vertical; spacing very wide

Potential Quarry Block Size: 2 m x 2 m x 1 m

Outcrop Exposure: Excellent

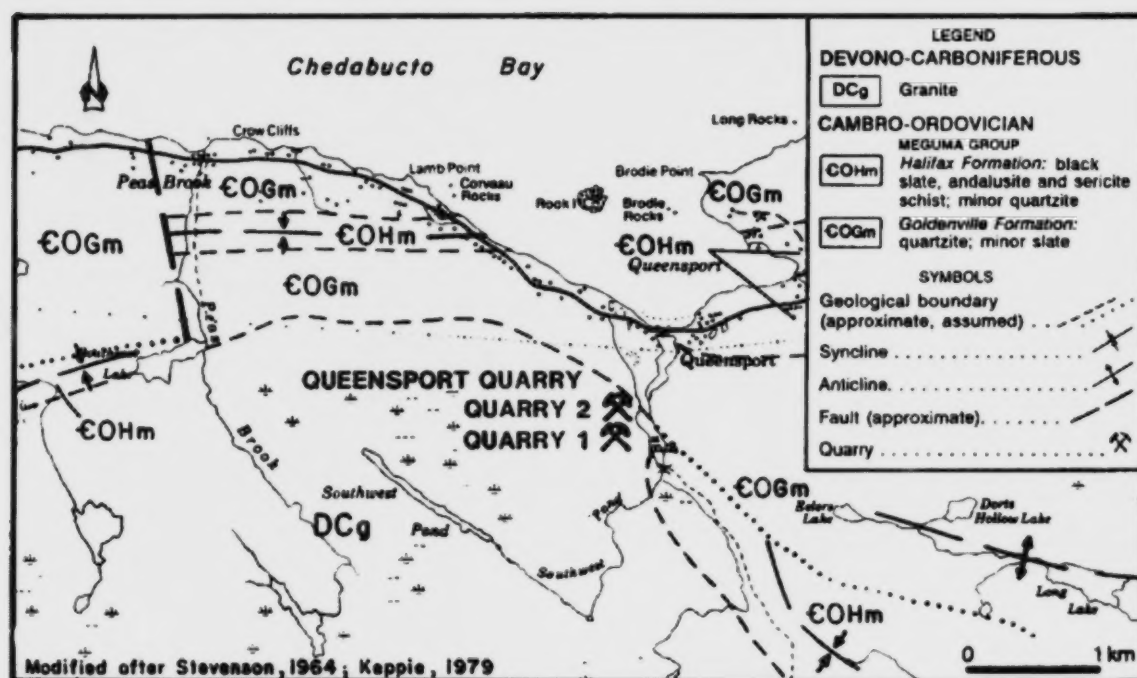


Figure 12. Geological location map for the Queensport Quarry, Guysborough County (11F/06).

Use of Explosives: Black powder

Mineralogy: 65% feldspar, 5% muscovite, 20% quartz (this is one of the hardest granites to saw of any sampled), 10% biotite

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: Stone was quarried roughly to size and hauled to a finishing plant by teams of horses. The plant was located on the brook and power was supplied by water. There was no saw, only a polisher. As many as 20 men were employed in the 1930s (personal communication, Jamieson). Granite was simply stripped off the surface of the rock which is horizontal. Sheeting allowed removal of blocks up to 1 m thick. The granite from this Quarry was primarily used for monument base stock because it is somewhat coarser grained than that in Quarry 2. Considering the yellow colour of the stone available, coupled with its hardness, further development of the Quarry for building stone is unlikely.

Quarry 2

Colour: Fresh yellowish grey; weathered orange grey
Grain Size: Fine to medium; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Irregular; moderate to intensive

Grain: Strike 60°, Dip 30°SE; spacing 1-2 m

Rift: Strike 176°, Dip 80°E; spacing 50 cm-1 m

Potential Quarry Block Size: 1 m x 50 cm x 50 cm

Outcrop Exposure: Good

Use of Explosives: Possibly high explosive

Mineralogy: 65% feldspar, 1% muscovite, 20% dark quartz, 14% biotite

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: The Quarry is 540 m north of Quarry 1. The excavation is semicircular in shape, 50 m in diameter and 20 m deep. The rock is highly fractured and high explosives may have been used. The local people suggest that this stone was used for monument blanks. Due to the highly fractured nature of the rock, the Quarry has limited potential for further development for building stone. It may, however, be an excellent source of granite for armour stone and aggregate.

Commercial Stone Name: **GRANITE GREY**
 County: **HALIFAX**
 Property Name: **COUGLAN QUARRY, PURCELLS COVE**

NTS: 11D/12

Longitude: 63°34'16"

Latitude: 44°36'33"

Sample Number: Not sampled

Date: August 26, 1989

Property Status: Abandoned

Geological Rock Name: Monzogranite

Possible Uses: Monuments, pavers, tiles

Location Description: The Cougлан Quarry is located 400 m west of Route 253 and 400 m north of Purcells Pond (Fig. 13). It can be reached by an old cart track which is located at the old school building in Purcells Cove. The Quarry is at 45 m elevation.

Production History: Granite was quarried in this location by the Cougлан family for several generations. The stone was used mainly for monuments and building stone. Production ceased when the business failed in the 1960s.

Colour: Fresh whitish grey; weathered yellowish grey; uniform

Grain Size: Medium; uniform

Fabric: No

Bedding: No

Jointing: Regular; moderate to intensive

Grain: Strike horizontal

Rift: Strike not determined, Dip vertical

Potential Quarry Block Size: 1 m x 50 cm x 50 cm

Outcrop Exposure: Good to excellent

Use of Explosives: Black powder

Mineralogy: Typical white to whitish-grey biotite monzogranite. Combined feldspar (50%), quartz (40%), biotite (10%)

Deleterious Minerals: No

Other Features: Abundant xenoliths of black slate and greywacke

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: The Cougлан Quarry produced a high volume of waste due to the random nature of the fracture pattern. Local residents say that a tramway carried stone from the Quarry to the Queen Wharf in Purcells Cove.

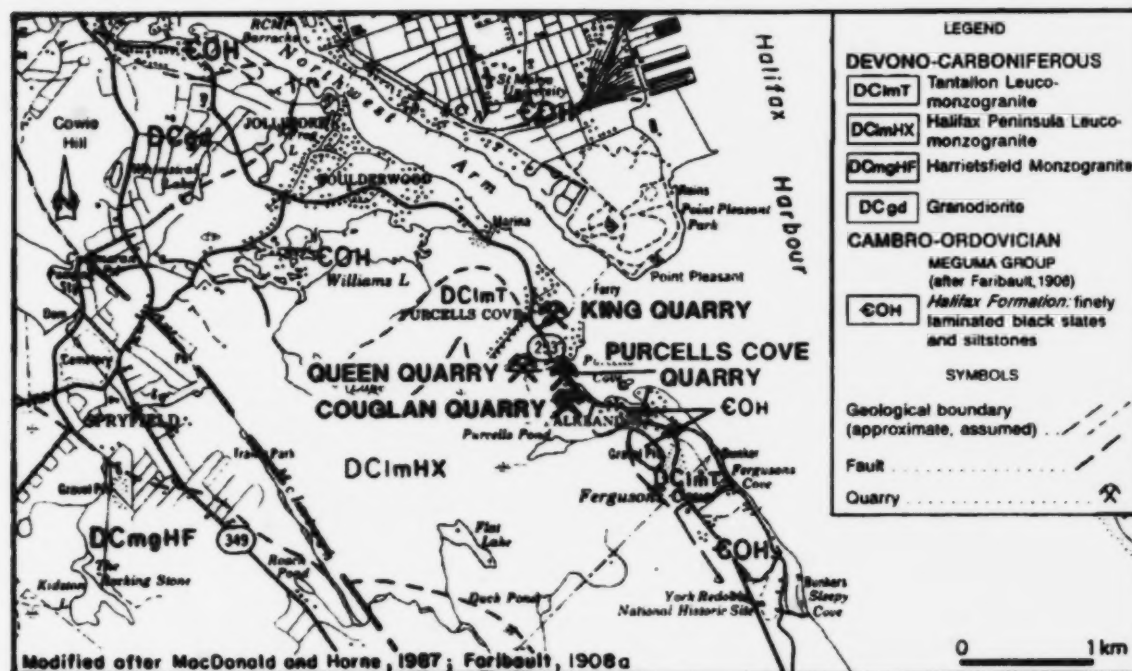


Figure 13. Geological location map for the Cougлан, Purcells Cove, Queen and King Quarries, Halifax County (11D/12).

Commercial Stone Name: GRANITE, GREY
County: HALIFAX
Property Name: FLETCHERS LAKE QUARRY

NTS: 11D/13

Longitude: 63°36'42"

Latitude: 44°50'43"

Sample Number: 87-01-05A Box 3

Date: June 26, 1987

Property Status: Abandoned

Possible Uses: Curbing, monuments, tile

Potential Quarry Block Size: 2 m x 2 m x 1 m

Outcrop Exposure: Excellent

Use of Explosives: No

Mineralogy: Very fresh looking granodiorite to monzogranite. Feldspar (65%), quartz (30%), biotite (5%)

Deleterious Minerals: No

Other Features: Stone seems free of xenoliths and veining

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Location Description: Fletchers Lake Quarry is located on the western side of Fletchers Lake, 1.5 km south of where the Canadian National Railway line crosses the Lake outlet (Fig. 14).

Production History: Production history is unknown. The Fletchers Lake Quarry was recorded by Faribault (1909) on his geological map. There is no other record of production.

Colour: Fresh white to grey; weathered grey; uniform

Grain Size: Medium; uniform

Texture: Equigranular to porphyritic; uniform

Fabric: No

Bedding: No

Jointing: Regular to irregular; moderate

Grain: Strike subhorizontal; spacing irregular

Rift: Strike 175°, Dip 82°E

Hardway: Strike 60°, Dip 82°SW

Comments: The land behind the old Quarry rises steeply to 100 m in elevation. The Quarry is an opening in the face of a rock bluff. Large blocks were drilled and wedged off the 5 m high working face by plug and feathers. Quarrying was carried out along the natural cliff face over a distance of 50 m. The stone breaks well by plug and feather technique producing straight sides with no runoff. This stone is one of the finest seen in the Halifax area, but unfortunately the Quarry is located about 200 m from active residential settlement on the eastern side of Fletchers Lake. Further exploration of the granite inland from the Lake could outline a suitable deposit.

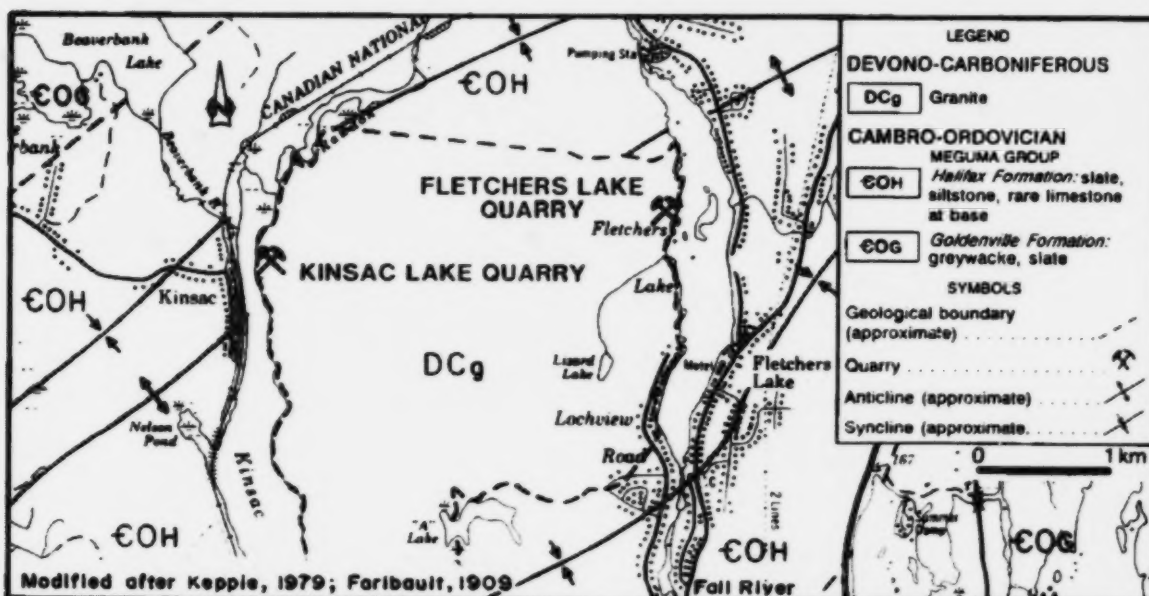


Figure 14. Geological location map for the Fletchers Lake and Kinsac Lake Quarries, Halifax County (11D/13).

Commercial Stone Name: GRANITE, GREY
County: HALIFAX
Property Name: GRANITE QUARRY, JOLLIMORE

NTS: 11D/12

Longitude: 63°36'02"

Latitude: 44°37'37"

Sample Number: Not sampled

Date: August 26, 1986

Property Status: Abandoned

Geological Rock Name: Granodiorite

Possible Uses: Limited because of the small size of quarry blocks

Fabric: No

Bedding: No

Jointing: Irregular; intensive

Potential Quarry Block Size: 1 m x 50 cm x 50 cm

Outcrop Exposure: Fair

Use of Explosives: No

Mineralogy: Grey granodiorite, plagioclase (50%), quartz (35%), biotite (15%)

Deleterious Minerals: No

Location Description: The Granite Quarry is located on the eastern side of Route 253, 200 m north of the brook which connects Whimsical Lake and Frog Lake (Fig. 15). No quarry face was seen although a depression exists where the old Quarry should be.

Other Features: The presence of black knots or xenoliths in moderate numbers detracts from the stone.

Production History: Unknown

Diamond Drilling Details: Not drilled

Colour: Fresh grey; weathered grey; uniform

Grain Size: Medium; uniform

Texture: Uniform

Physical Properties: n/a

Comments: This area is now residential and the old Granite Quarry is in a resident's backyard; it would be impossible to quarry stone because of the settlement.

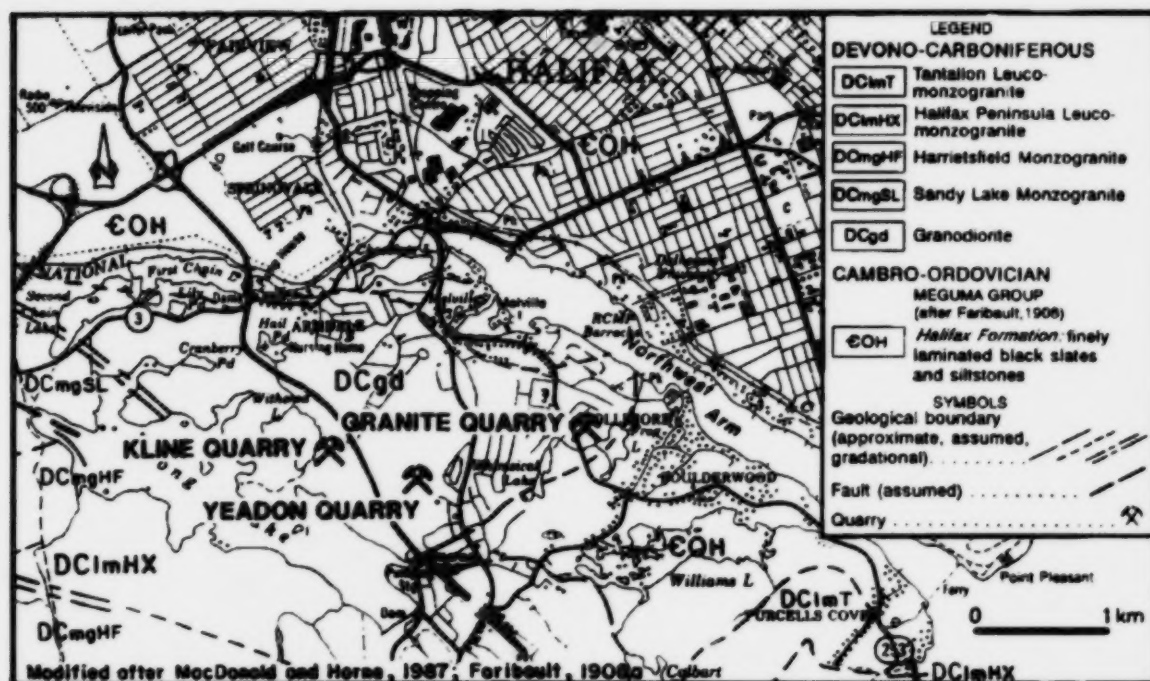


Figure 15. Geological location map for the Granite, Kline and Yeadon Quarries, Halifax County (11D/12).

Commercial Stone Name: GRANITE, GREY
County: HALIFAX
Property Name: KINSAC LAKE QUARRY

NTS: 11D/13

Longitude: 63°38'59"

Latitude: 44°50'32"

Sample Number: Not sampled

Date: June 24, 1987

Property Status: Abandoned

Geological Rock Name: Biotite monzogranite

Possible Uses: Limited to small rough block stone work and possibly tiles

Location Description: There is an opening on the eastern side of Kinsac Lake directly across the Lake from the Village of Kinsac. The opening is 600 m south of the Lake outlet to the Rawdon River (Fig. 14, p. 23).

Production History: The production history is unknown. The Quarry is located on Faribault's (1909) geology map which indicates activity sometime prior to 1909.

Colour: Fresh whitish grey with shades of pink; weathered grey; variable

Grain Size: Medium; uniform

Texture: Mildly porphyritic; uniform

Fabric: No

Bedding: No

Jointing: Irregular; moderate

Grain: Strike horizontal; spacing 1-1.5 m

Rift: Strike 85°, Dip 73°S; spacing 1.5 m

Hardway: Strike 140°, Dip vertical; spacing 1.5 m

Potential Quarry Block Size: 1 m x 50 cm x 50 cm

Outcrop Exposure: Good to excellent

Use of Explosives: No

Mineralogy: Combined feldspar (60-70%), quartz (15-20%), biotite (5%), muscovite (5%). Clusters of biotite and muscovite up to 1 cm common. Phenocrysts of feldspar up to 1-2 cm long are frequent.

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: Two openings were made in the outcrop at the shoreline of the Lake. The most northerly was 10 m long and 7 m east into the rock bluff. The back face is 4 m high. Immediately to the south, a notch about 5 m long by 5 m wide was cut into the outcrop. Here the face is about 4 m high. It is difficult to determine quarry parameters. There was difficulty in obtaining square blocks. Runout was apparent on the east-west joint set. In the southern hole plug and feather holes seemed to be incorrectly aligned because runout was observed on most faces. Few blocks over 1 m by 70 cm by 30 cm were seen.

Commercial Stone Name: GRANITE, GREY
County: HALIFAX
Property Name: KLINE QUARRY, COWIE HILL

NTS: 11D/12

Longitude: 63°37'37"

Latitude: 44°37'32"

Sample Number: Not sampled

Date: August 26, 1986

Property Status: Abandoned

Geological Rock Name: Granodiorite

Possible Uses: Possibly tiles, monument bases

Location Description: The Kline Quarry (Faribault, 1908a) is located on the western side of the Dunbrack-Spryfield extension, 200 m northeast of the southeastern corner of Witherod Lake near a power line (Fig. 15, p. 24).

Production History: Parks (1914) described the Kline Quarry as several small openings with six derricks in operation. It produced polished stone chiefly for monuments and for building. The Quarry has long been abandoned.

Colour: Fresh grey; weathered grey; uniform

Grain Size: Medium; uniform

Texture: Porphyritic; uniform

Fabric: No

Bedding: No

Jointing: Irregular; moderate to intensive

Grain: Strike 90°, Dip vertical; spacing 50 cm-2 m

Rift: Strike horizontal; spacing unknown

Hardway: Strike 15°, Dip vertical; spacing 50 cm-3 m

Potential Quarry Block Size: 3 m x 1 m x 50 cm

Outcrop Exposure: Good

Use of Explosives: No

Mineralogy: Plagioclase (50%), quartz (40%), biotite (10%)

Deleterious Minerals: No

Other Features: Granite contains abundant black knots or xenoliths

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: The Kline Quarry is adjacent to a settled area on Cowie Hill and production is unlikely to resume. Similar granite at Quarry Lake Quarry (p. 28), Halifax County, may prove to be a better source of this type of granodiorite.

Commercial Stone Name: GRANITE, GREY
County: HALIFAX
Property Name: PURCELLS COVE QUARRY

NTS: 11D/12

Longitude: 63°34'09"

Latitude: 44°36'35"

Sample Number: Not sampled

Date: August 26, 1989

Property Status: Abandoned

Geological Rock Name: Monzogranite

Possible Uses: Cladding, curbing, tiles and ashlar

Potential Quarry Block Size: 2 m x 2 m x 1 m

Outcrop Exposure: Excellent

Use of Explosives: Black powder and dynamite

Mineralogy: Combined feldspar (50%), quartz (40%), biotite (5-10%). This granite is similar to the Terence Bay stone, but with less cordierite

Deleterious Minerals: No

Location Description: This is a large quarry excavation on the western side of Route 253 at Purcells Cove where the water comes closest to the road (Fig. 13, p. 22). A private residence presently occupies the old quarry floor.

Other Features: The presence of xenoliths may detract from the Quarry's potential as a producer of large uniform blocks.

Diamond Drilling Details: Not drilled

Production History: The local inhabitants stated that the Purcells Cove Quarry was used for building stone after the old Queen Quarry was abandoned and then in later years was used for armour stone and rip rap.

Physical Properties: n/a

Colour: Fresh whitish grey; weathered grey; uniform

Grain Size: Medium to coarse; uniform

Texture: Porphyritic; uniform

Fabric: No

Bedding: No

Jointing: Regular; limited to moderate

Grain: Strike 147°, Dip 5°SE; spacing not determined

Rift: Strike 64°, Dip vertical; spacing 3-4 m

Hardway: Strike 148°, Dip 58°SW; spacing 2 m

Comments: The Quarry is semicircular in shape, 125 m in diameter with the western face over 35 m high rising nearly vertically. The latest use of the Quarry appears to be for armour stone and rip rap. Several 10 cm blast holes were visible on top of the high wall. The holes were drilled from the top and the stone blasted off the face to the Quarry floor. Consequently the stone is fractured severely back from the face several metres. However, competent stone is available to the west of the main face. Due to residential development it is unlikely that any further production will take place.

Commercial Stone Name: GRANITE, GREY (SILVER GREY)
County: HALIFAX
Property Name: QUARRY LAKE QUARRY, HALIFAX

NTS: 11D/12

Longitude: 63°41'12"

Latitude: 44°40'05"

Sample Number: 87-01-03 Box 3; Sample 7,
 NSDME Sample Catalogue 89-01

Date: June 25, 1987

Property Status: Abandoned

Geological Rock Name: Granodiorite

Possible Uses: Curbing, tiles, ashlar

Location Description: The Quarry Lake Quarry (Faribault, 1908a) is accessed by an old road which trends west from the Trans-Canada Highway 102 at Kearney Lake (Fig. 16). The road originates in the quartzite quarry operated by Gateway Materials and ends at Quarry Lake.

Production History: The Quarry was opened in the mid 1800s and production took place from at least four openings. The stone was used for building construction. Evidence at the Quarry suggests that it has been inactive for at least 40 years.

Colour: Fresh grey; weathered grey; uniform

Grain Size: Medium to coarse; uniform

Texture: Mildly porphyritic; uniform

Fabric: No

Bedding: No

Jointing: Regular to irregular; moderate to intensive

Grain: Strike 75°, Dip 10°NW; spacing 50 cm-1 m

Rift: Strike 45°, Dip 84°SE; spacing 3-4 m

Hardway: Strike 133°, Dip vertical; spacing 2-5 m

Potential Quarry Block Size: 1 m x 1 m x 75 cm

Outcrop Exposure: Excellent

Use of Explosives: Black powder

Mineralogy: Typical granodiorite, combined feldspar (65%), quartz (20%), biotite (15%)

Deleterious Minerals: No

Other Features: Some biotite shows brown weathering stain. Irregularly spaced quartz and pegmatite veins may increase waste factor. Xenoliths of quartzite common.

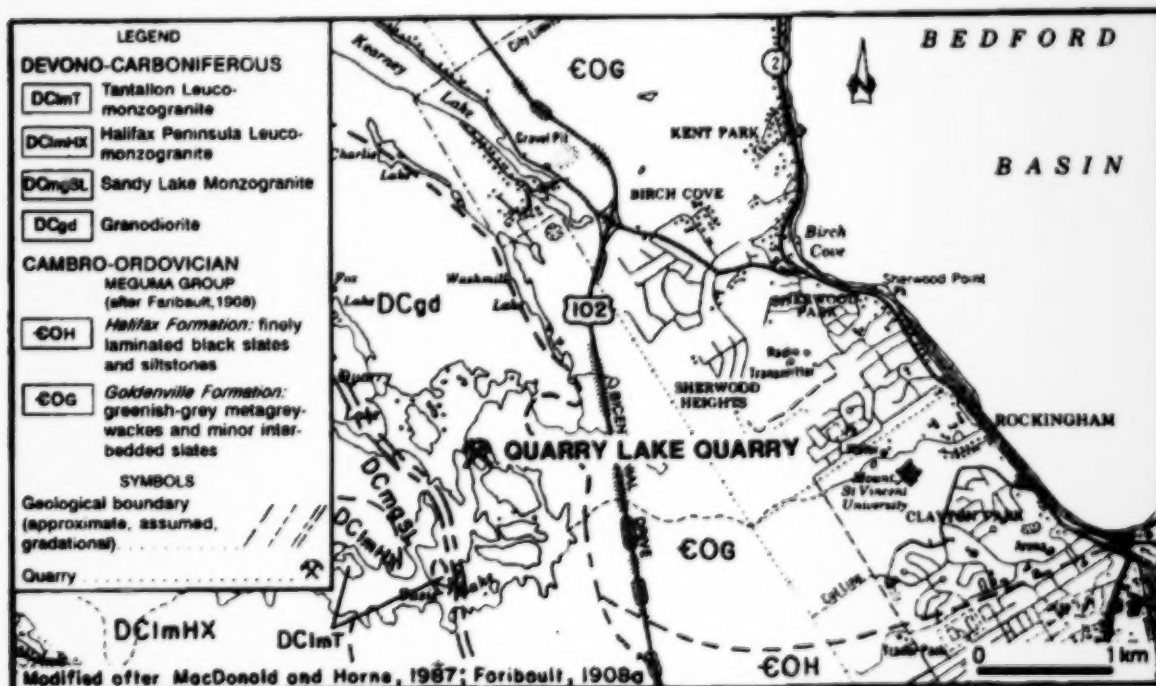


Figure 16. Geological location map for the Quarry Lake Quarry, Halifax County (11D/12).

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: The two main quarry openings on the shore of Quarry Lake are about 100 m apart, with the most westerly opening the more recent. A third quarry opening was found overgrown by trees about 200 m to the east. The main Quarry is 10 m in diameter and the last working face is 5 m high. Although pegmatite and

quartz veins are numerous along the shoreline, the quarries are quite free of such things. The landscape consists of gently rolling ridges of bedrock separated by lakes and swampy land. Outcrop is virtually continuous on the ridges and absent in the depressions. This location is probably the best in the Halifax area for building stone production. The joint spacing would prohibit the extraction of very large blocks although pieces in the 2-4 t range could easily be produced.

Commercial Stone Name: GRANITE, GREY
County: HALIFAX
Property Name: QUEEN QUARRY, PURCELLS COVE

NTS: 11D/12

Longitude: 63°34'25"

Latitude: 44°36'38"

Sample Number: Not sampled

Date: August 26, 1986

Property Status: Abandoned

Geological Rock Name: Monzogranite

Possible Uses: Building stone, curbing, tiles

Location Description: The Queen Quarry (Faribault, 1908a) is located 400 m west of the old school building in Purcells Cove and can be reached by a foot path which leads to a new subdivision west of the old Quarry (Fig. 13, p. 22).

Production History: This was one of the earliest quarries to operate in the Halifax area and stone from it was used in the construction of the Halifax Citadel and many other public buildings. Stone was moved by tram to the Queen Wharf in Purcells Cove (Parks, 1914).

Colour: Fresh grey; weathered grey; uniform

Grain Size: Medium; uniform

Texture: Equigranular to porphyritic; uniform

Fabric: No

Bedding: No

Jointing: Not determined

Outcrop Exposure: Good

Use of Explosives: Black powder

Mineralogy: Feldspars (50%), quartz (40%), biotite (10%)

Deleterious Minerals: No

Other Features: The granite contains abundant black knots or xenoliths

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: This granite is similar to that quarried in the Coughlan Quarry (p. 22) and has been used extensively in the City of Halifax for building. Due to the proximity of the Quarry to expanding subdivisions in the area it is unlikely that any further development will take place.

Commercial Stone Name: GRANITE, GREY
County: HALIFAX
Property Name: YEADON QUARRY, HALIFAX

NTS: 11D/12
Longitude: 63°36'55"
Latitude: 44°37'18"
Sample Number: Not sampled
Date: August 26, 1986
Property Status: Developed for housing
Geological Rock Name: Granodiorite
Possible Uses: None

Location Description: The old Yeadon Quarry was not found because the area has been built up with housing. The location on Faribault's (1908a) map situates the Quarry 200 m southwest of Dents Punch Bowl on Cowie Hill (Fig. 15, p. 24).

Production History: This Quarry, operated by Isaac Yeadon in the early 1900s, was one of several in the Cowie Hill area. The Quarry was operating in 1908 and in 1911 (Parks, 1914).

Colour: Fresh grey; weathered grey; uniform
Grain Size: Medium to coarse; variable
Texture: Uniform
Fabric: No
Bedding: No
Jointing: Regular; moderate
Grain: Strike 90°, Dip vertical
Rift: Strike horizontal, Dip horizontal; spacing 1-2 m

Hardway: Strike 15°, Dip vertical; spacing 2.5 m
Potential Quarry Block Size: 3 m x 1 m x 1 m
Outcrop Exposure: Unknown
Use of Explosives: No

Mineralogy: Plagioclase (50%), quartz (40%), biotite (10%); plagioclase is unweathered for the most part, weathering and decomposition occur in the crystal centres first; quartz grains are smaller than the feldspar and have a brownish cast; the biotite is brownish and fresh.

Deleterious Minerals: No

Other Features: The presence of black knots or xenoliths is a cause for concern according to Parks (1914) because ... "no pieces of any considerable size can be obtained free from this disfigurement".

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 167.76 lbs/ft³, Absorption 0.208%, Compressive strength 25,959 lbs/in², Transverse strength 2,439 lbs/in²

Comments: Due to the degree to which the area is built up with housing, it is unlikely that any future quarry development is possible.

Commercial Stone Name: GRANITE, GREY
County: LUNENBURG
Property Name: ASPOTOGAN QUARRY, BLACKMANS HEAD

NTS: 21A/09

Longitude: 64°02'31"

Latitude: 44°31'23"

Sample Number: 87-01-04 Box 3

Date: June 25, 1987

Property Status: Abandoned

Geological Rock Name: Biotite granodiorite

Possible Uses: Armour stone and rip rap

Fabric: No

Bedding: No

Jointing: Irregular; intensive

Main Sheeting: Strike 135°, Dip vertical; spacing 60 cm-1.2 m

Potential Quarry Block Size: 1 m x 50 cm x 50 cm

Outcrop Exposure: Good

Use of Explosives: High explosives

Mineralogy: 60% feldspar, 30% quartz, 10% biotite

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Location Description: The old Aspotogan Quarry is located on the northeastern side of Aspotogan (Faribault, 1908b). The opening is 250 m west of the outlet from Awalt Lake (Fig. 17).

Production History: The production history is unknown. Granite from the area was used for basement blocks in local houses. This particular Quarry was probably used to obtain a small amount of armour stone.

Colour: Fresh grey; weathered grey; uniform

Grain Size: Medium; uniform

Texture: Equigranular to porphyritic; uniform

Comments: No evidence of a building stone quarry was found although some blasting has been carried out in the last 30 years at this location. The granite rises along the roadside to about 10 m and some jack hammer holes were drilled from the top of the face. No plug and feather work was seen. Due to the high joint frequency and proximity to residential houses further quarry development is unlikely.

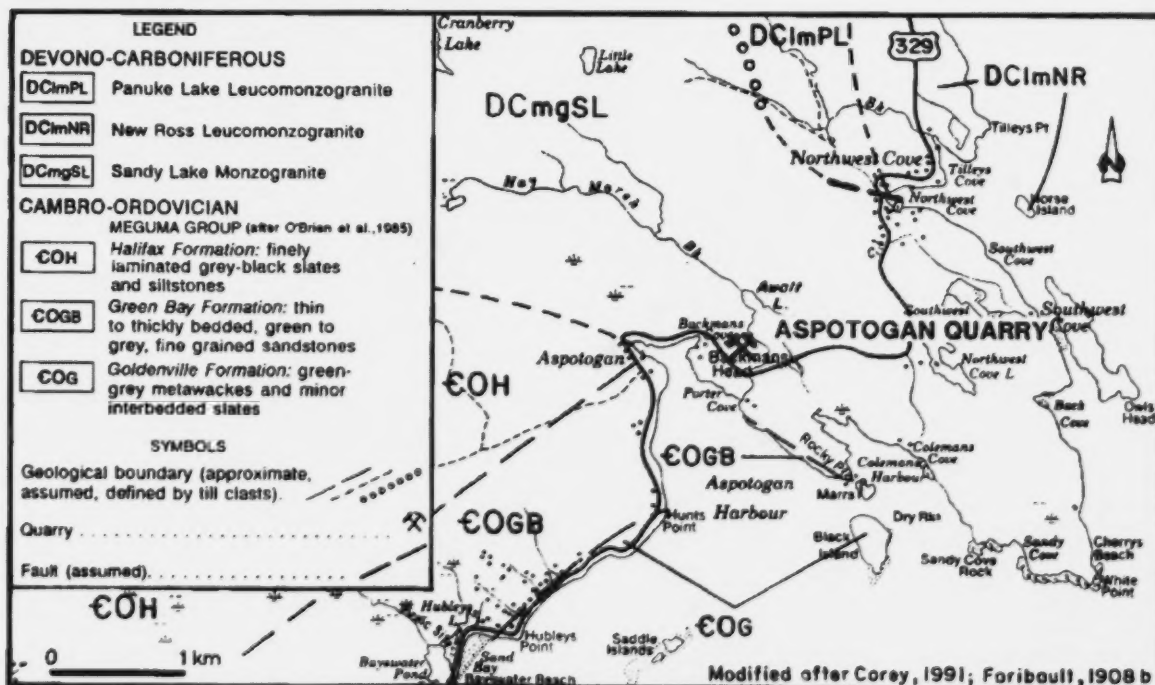


Figure 17. Geological location map for the Aspotogan Quarry, Lunenburg County (21A/09).

Commercial Stone Name: GRANITE, GREY (SCOTIA GREY)
County: SHELBURNE
Property Name: SHELBURNE ISLAND PARK QUARRY

NTS: 20P/14

Longitude: 65°20'02"

Latitude: 43°45'57"

Sample Number: 86-01-02 Box 1; Sample 9, NSDME Sample Catalogue 89-01

Date: August 15, 1986

Property Status: Abandoned and reclaimed quarry, now Provincial Park

Geological Rock Name: Biotite-muscovite monzogranite

Possible Uses: Monument stone, ashlar, rubble stone, curbing, cladding

Location Description: The Shelburne Island Park Quarry is located at the Shelburne Island Provincial Park directly west across Shelburne Harbour from the Town of Shelburne (Fig. 18).

Production History: The Quarry had produced stone for many years at the time of Parks' (1914) report. Stone was quarried until the early 1960s by

Dauphinee's of Shelburne (Carr, 1955).

Colour: Fresh whitish grey; weathered grey; uniform

Grain Size: Fine to medium; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Regular; limited to moderate

Sheeting Grain: Strike 60°, Dip 25°NW; spacing 3 m

Rift: Strike 60°, Dip 65°NW; spacing 20 cm-3 m

Hardway: Strike 120°, Dip vertical; spacing variable

Potential Quarry Block Size: 60 cm x 60 cm x 2 m

Outcrop Exposure: Good

Use of Explosives: Black powder

Mineralogy: 60% feldspar, 5% muscovite, 25% quartz, 10% biotite. Mirolitic cavities are common, but generally less than 3 mm in diameter. The presence of muscovite gives a slight gold cast to the stone.

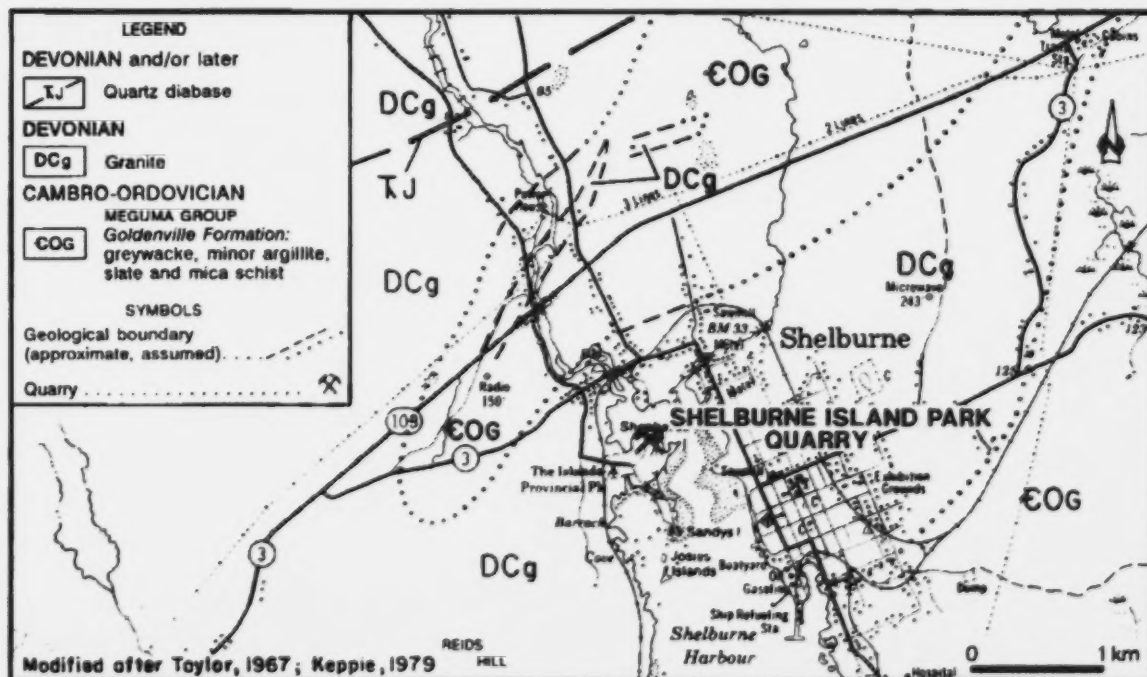


Figure 18. Geological location map for the Shelburne Island Park Quarry, Shelburne County (20P/14).

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 167.016 lbs/ft³, Absorption 0.172%, Compressive strength 28,440 lbs/in², Transverse strength n/a

Comments: The old Quarry and waste pile are located just north of the Park office and at the time of my visit were grown up with alders and brush. The Quarry hole was full of water and measured 30 m in diameter and was reported to be 30 m deep (personal

communication). In 1987 the old Quarry hole was backfilled by the Nova Scotia Department of Lands and Forests and the site graded. The only thing remaining is a waste pile of stone. The quality of the granite cannot be denied and although this Quarry is no longer accessible the granite body in which the Quarry is located is large. A moderate exploration program around the Shelburne area would, no doubt, identify a suitable new quarry site. The granite was used in the construction of St. Bernard Church, Digby County, and the Shelburne Post Office.

Commercial Stone Name: GRANITE, RED
County: INVERNESS
Property Name: FIRST FORK BROOK OCCURRENCE

NTS: 11K/07

Longitude: 59°57'14"

Latitude: 46°28'25"

Sample Number: 86-01-30 Box 1; Drill core FFB-87-01

Date: September 25, 1986

Property Status: Prospect

Geological Rock Name: Granite

Possible Uses: Armour stone, rip rap

Location Description: The quarry prospect is located on the northern side of First Fork Brook, 2.45 km east of Forest Glen. First Fork Brook is a tributary of the Northeast Margaree River, 3.5 km northeast of Kingross (Fig. 19).

Production History: No production

Colour: Fresh red; weathered red brown

Grain Size: Coarse; uniform

Texture: Equigranular; uniform

Fabric: No

Bedding: No

Jointing: Regular

Grain: Strike 40°, Dip 4°NW; spacing 1.5-2.5 m

Rift: Strike 60°, Dip vertical; spacing 2-3 m

Hardway: Strike 154°, Dip vertical; spacing 2-3 m

Potential Quarry Block Size: 3 m x 3 m x 2 m

Outcrop Exposure: Excellent

Use of Explosives: No

Mineralogy: 60% potash feldspar (kaolinized), 35% quartz, 5% biotite

Deleterious Minerals: Kaolinized feldspar

Diamond Drilling Details: Two holes were collared 200 m apart and drilled vertically to 61 m and 32.6 m (FFB-87-01 and FFB-87-02; Fig. 20; Appendix 1, P. 112). Both holes intersected kaolinized, red, coarse grained granite throughout.

Physical Properties: n/a

Comments: Although the joint pattern is orthogonal and widely spaced, the granite is kaolinized and not suitable for building stone. It would be an excellent source of armour stone and rip rap.

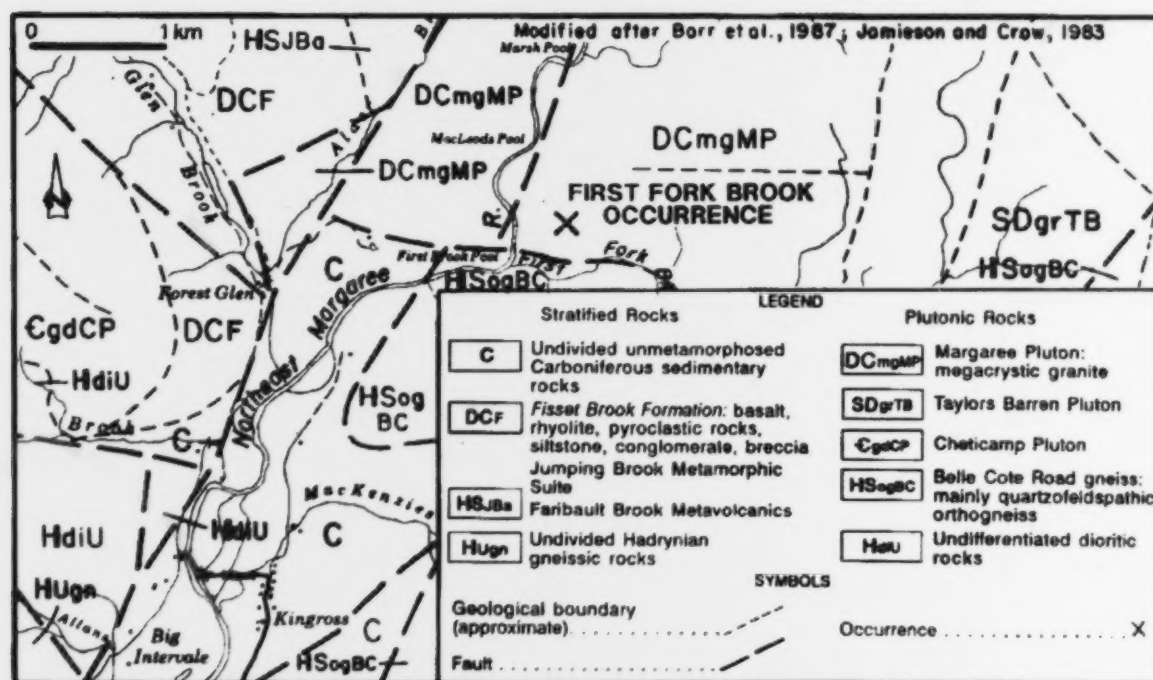


Figure 19. Geological location map for the First Fork Brook occurrence, Inverness County (11K/07).

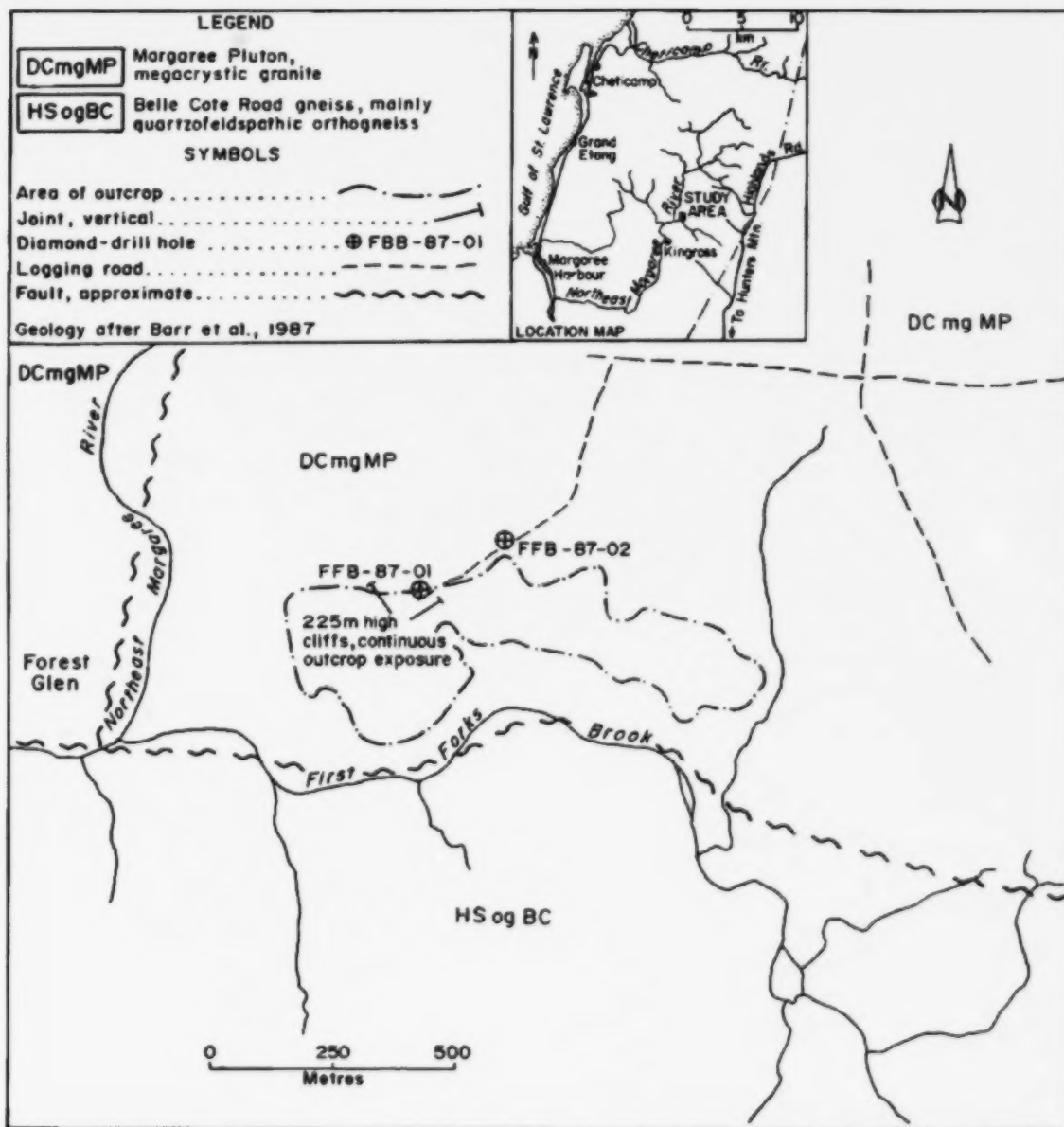


Figure 20. First Fork Brook occurrence, Inverness County, diamond-drill hole locations (not surveyed) (FFB-87-01 and FFB-87-02) (11K/07).

Commercial Stone Name: GRANITE, WHITE (BROOKFIELD WHITE)

County: HALIFAX

Property Name: BROOKFIELD QUARRY, TERENCE BAY

NTS: 11D/05

Longitude: 63°43'00"

Latitude: 44°28'21"

Sample Number: 86-01-05 Box 1; Sample 10,
NSDME Sample Catalogue 89-01

Date: August 16, 1986

Property Status: Past producing quarry

Geological Rock Name: Leucomonzogranite

Possible Uses: Ashlar, monuments, curbing, counter tops, cladding

Location Description: The Brookfield Quarry is located at Terence Bay about 15 km west of Halifax, southwest from Route 333 at Whites Lake. The openings are at the mouth of the Terence Bay River on the eastern side opposite the Village of Terence Bay at water level (Fig. 21). Also 200 m further east is what appears to be large roche moutonne, the southern end of which was quarried.

Production History: Stone was quarried between 1900 and 1907 by S. M. Brookfield for use as

dimension blocks, ashlar and monuments in the Halifax area. The stone was transported by vessel to Halifax (Parks, 1914; Carr, 1955).

Colour: Fresh white to off white; weathered white; uniform

Grain Size: Coarse; uniform

Texture: Porphyritic; uniform

Fabric: No

Jointing: Regular; limited

Grain: Strike 140°, Dip 27°NE; spacing 1.5-2 m

Rift: Strike 80°, Dip 74°S; spacing 2 m

Hardway: Strike 180°, Dip 70°W; spacing 1 m

Potential Quarry Block Size: 2 m x 2 m x 2 m

Outcrop Exposure: Excellent

Use of Explosives: No

Mineralogy: Microcline (50%), quartz (35%), plagioclase (5%), biotite (4%), muscovite (1%), cordierite (5%), microcline phenocrysts up to 5 cm long.

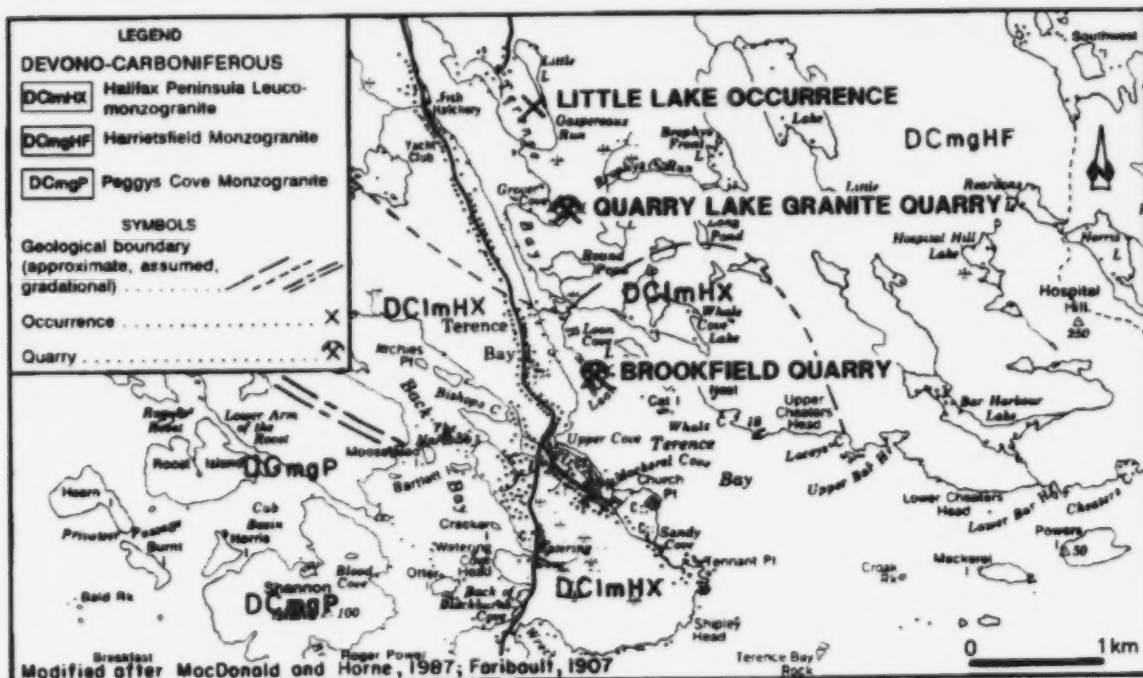


Figure 21. Geological location map for the Brookfield Quarry, Little Lake occurrence and Quarry Lake Granite Quarry, Terence Bay, Halifax County (11D/05).

Deleterious Minerals: No

Other Features: Minor aplite dykes and quartz veins, very widely spaced

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 164.95 lbs/ft³, Absorption 0.209%, Compressive

strength 25,893 lbs/in², Transverse strength 2,269 (lbs/in²)

Comments: No regular quarry existed, because the stone was removed from surface exposures at several places along the shoreline. Due to the proximity to salt water and the lack of land access, development would be difficult. However, the joint pattern would facilitate the quarrying of large blocks. The Merrill Lynch Building (Bank of Commerce, 1907), Halifax, was constructed using this stone.

Commercial Stone Name: GRANITE, WHITE
County: HALIFAX
Property Name: LITTLE LAKE OCCURRENCE,
TERRENCE BAY

NTS: 11D/05

Longitude: 63°43'22"

Latitude: 44°29'38"

Sample Number: Not sampled

Date: August 16, 1986

Property Status: Prospect

Geological Rock Name: Leucomonzogranite

Possible Uses: Cladding, curbing, monuments, counter tops

Location Description: The area explored is the western side of Little Lake, 2.5 km north of the Village of Terence Bay on the eastern side of the Terence Bay River (Fig. 21, p. 37). An area of continuous outcrop surrounds Little Lake. The best area occurs on Crown Land, 500 m south of the small settlement at Little Lake.

Production History: There was never any building stone production from this location.

Colour: Fresh white to off white; weathered white to grey; uniform

Grain Size: Coarse; uniform

Fabric: No

Bedding: No

Jointing: Regular; limited

Grain: Strike horizontal; spacing 3 m

Rift: Strike 160°, Dip vertical; spacing 10 m

Hardway: Strike 72°, Dip vertical; spacing 25 m

Potential Quarry Block Size: 5 m x 5 m x 3 m

Outcrop Exposure: Excellent

Use of Explosives: No

Mineralogy: Microcline (55%), quartz (35%), biotite (5%), cordierite (5%), microcline phenocrysts up to 5 cm in length.

Deleterious Minerals: No

Other Features: Rare, partially digested xenoliths of country rock. Aplite dykes are occasionally present. Very widely spaced joint pattern unique to all other areas examined.

Diamond Drilling Details: Four holes approximately 15 m in depth were drilled in a line, 25 m west of and parallel to Little Lake (TB-87-08 to TB-87-11; Figs. 22a and b; Appendix 1, p. 136). A fifth hole was collared 20 m west of the previously mentioned line of holes (TB-87-12). Major joint sets are common at depths of about 5 m and 15 m.

Physical Properties: n/a

Comments: This area was selected for exploration based upon the wide joint frequency, proximity to a road and outcrop exposure. On the basis of surface exposure an estimated 10 000 m³ of stone are available with no overburden removal required. The area is flat and wheeled vehicles could be used for quarrying the stone. Approximately 350 m of road are required to access the site. Diamond drilling has shown the stone to be uniform in grain size, colour and texture. Testing conducted on similar granite salvaged from the Brookfield Quarry, Terence Bay, indicates that the stone burns moderately easily, saws readily and takes a polish easily. This site contains enough drill indicated reserves to make it a world class building stone quarry. The surface rights are held by the Crown and the land is designated Park Reserve. This puts some constraints on the development of the site for quarrying and may restrict the size of any operation which may develop. Any access road would have to cross a narrow strip of private land.

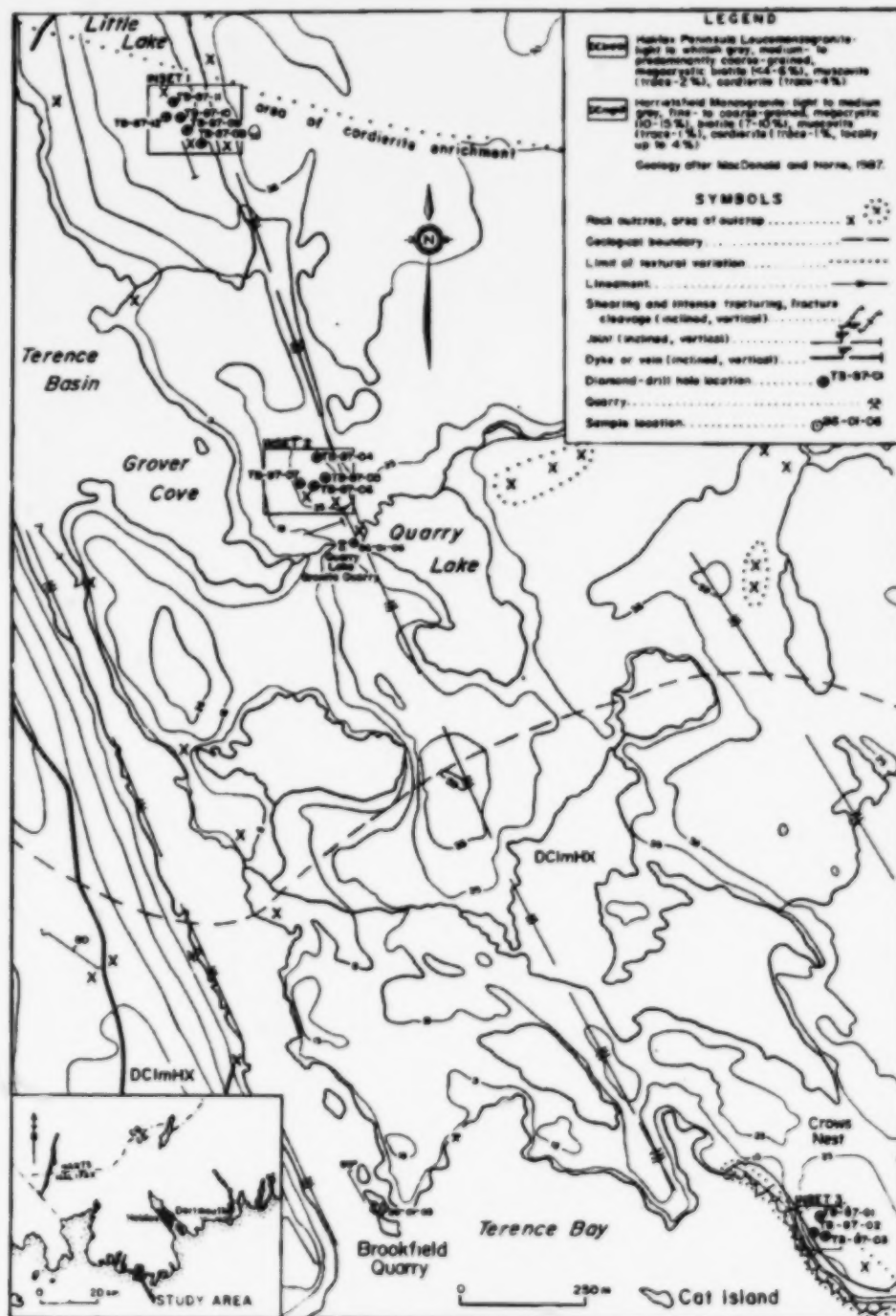


Figure 22a. Terence Bay granite deposit, Halifax County, geological map and diamond-drill hole locations (TB-87-01 to TB-87-12) (11D/05). See pages 41, 43 and 44 for Insets 1-3, respectively.

Inset I Little Lake Occurrence

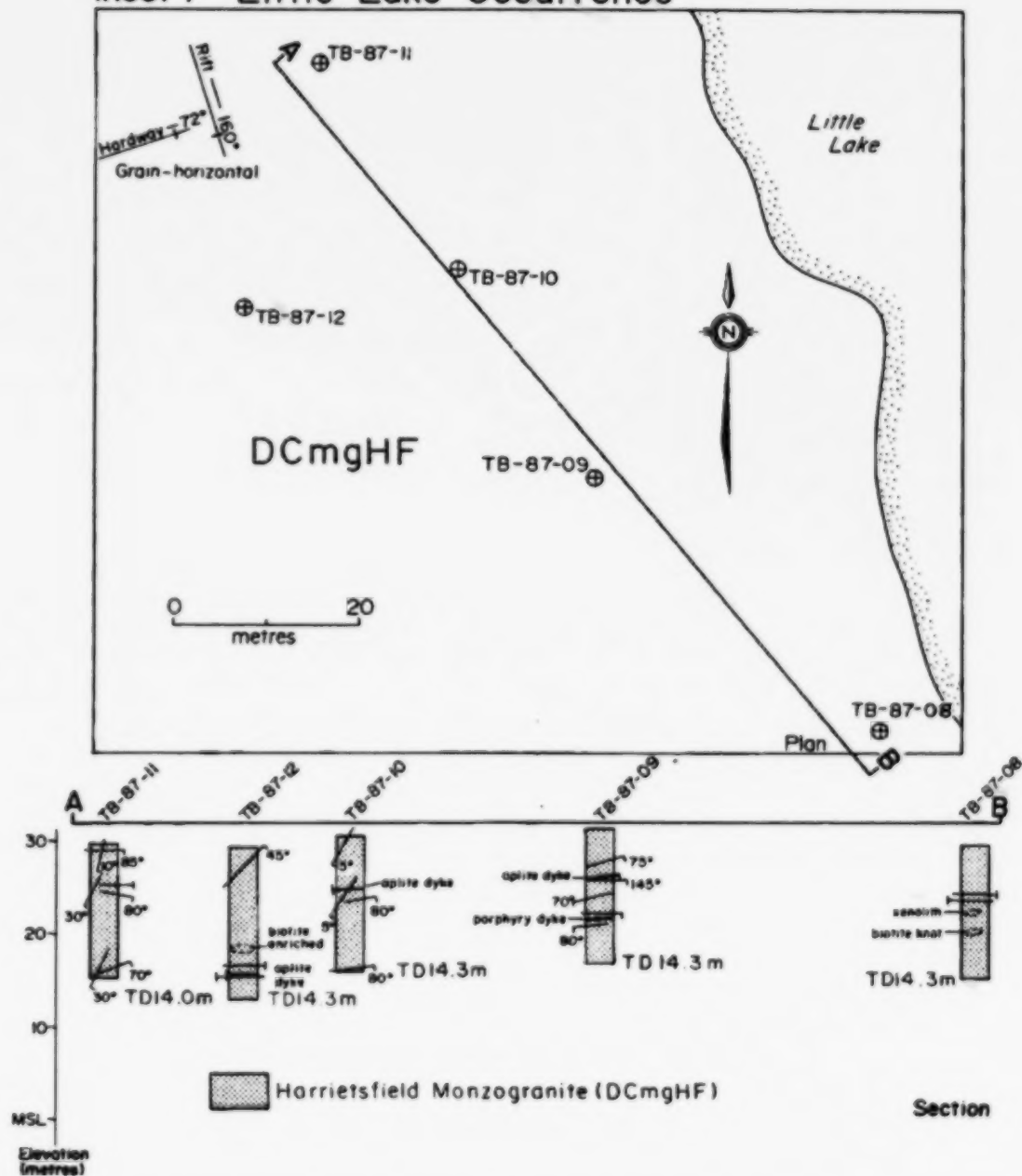


Figure 22b. Detailed location map and section A-B of drillholes TB-87-08 to TB-87-12, Little Lake occurrence, Terence Bay, Halifax County (11D/05). (Inset 1 on Figure 22a).

NTS: 11D/05

Longitude: 63°43'05"

Latitude: 44°29'05"

Sample Number: 86-01-06 Box 1; Drill core TB-87-06

Date: August 22, 1986

Property Status: Past producer

Geological Rock Name: Leucomonzogranite

Possible Uses: Curbing stone, ashlar

Location Description: The old Quarry Lake Granite Quarry is located at Terence Bay, 15 km west of Halifax. An opening was made at the outlet of Quarry Lake, 2 km north of the Village of Terence Bay on the eastern side of the Terence Bay River (Fig. 21, p. 37).

Production History: Small quantities of dimension blocks were taken from a 2 m high face at a small waterfall, in the early 1900s. Blocks were hauled down to the Terence Bay River, loaded on barges and hauled to Halifax.

Colour: Fresh white to greyish white; weathered grey; uniform

Grain Size: Coarse; uniform

Texture: Porphyritic; uniform

Fabric: No

Bedding: No

Jointing: Regular; moderate

Grain: Strike 107°, Dip 16°S; spacing 2-4 m

Rift: Strike 137°, Dip 58°NE; spacing 1.5-5 m

Hardway: Strike 74°, Dip 70°NW; spacing 4-5 m (Note: these readings are from the old Quarry site.)

Potential Quarry Block Size: 2 m x 2 m x 1 m

Outcrop Exposure: Excellent

Use of Explosives: No

Mineralogy: Microcline (55%), quartz (35%), biotite (5%), cordierite (5%), abundant phenocrysts of microcline up to 5 cm long, which locally give a slight foliation to the stone.

Deleterious Minerals: No

Other Features: Occasional, partially digested xenoliths of country rock, occasional quartz veins and aplite dykes

Diamond Drilling Details: A large outcrop 150 m north of the old Quarry was drilled (Fig. 22a, p. 40). Four vertical holes, approximately 30 m in depth, were spaced 25 m apart (TB-87-04 to TB-87-07; Fig. 22c; Appendix 1, p. 134). Granite was moderately fractured with joints from horizontal to 70°. Although surface exposures indicate wide joint spacing, drill core reveals many joints at depth. (Note: grain, rift, and hardway readings on Figure 22c refer to the drill site.)

Physical Properties: n/a

Comments: This site was one of three locations in the Terence Bay area which was investigated by diamond drilling by the Nova Scotia Department of Mines and Energy in 1987. The potential for quarrying large blocks is not as great as in the other locations because of higher joint frequency.

Inset 2 Quarry Lake Granite Quarry

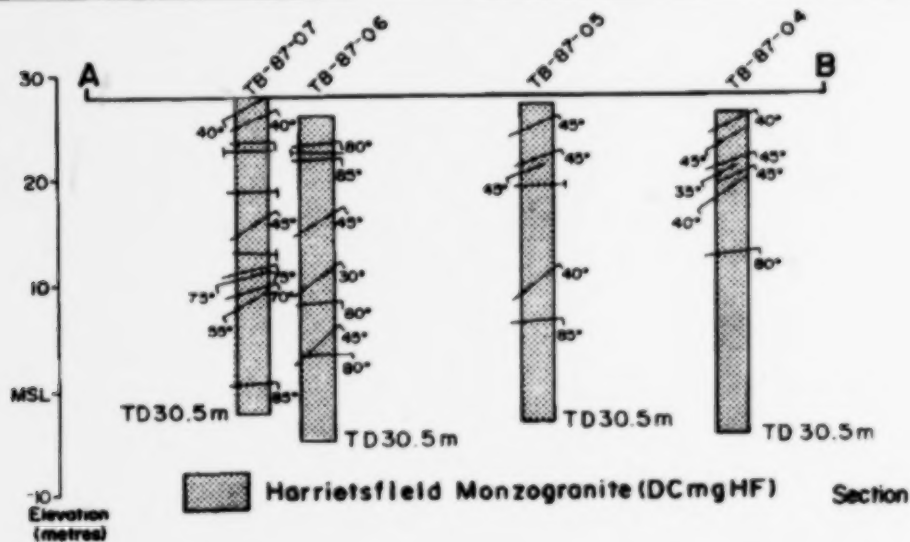
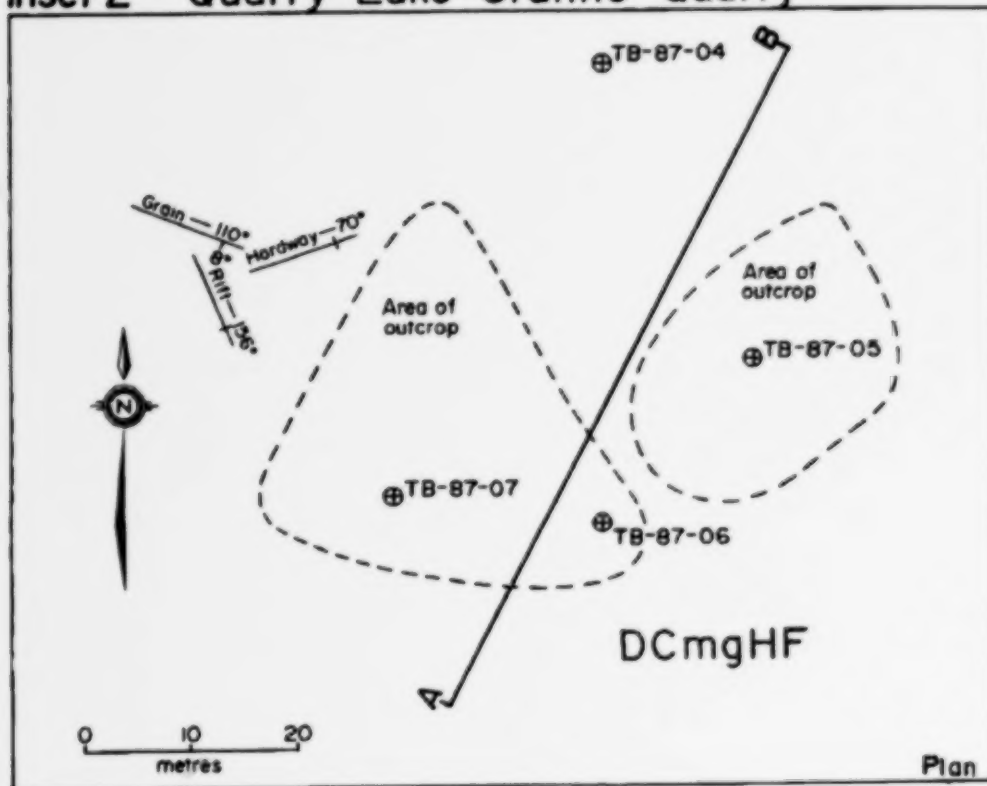


Figure 22c. Detailed location map and section A-B of drillholes TB-87-04 to TB-87-07, Quarry Lake Granite Quarry, Terence Bay, Halifax County (11D/05). (Inset 2 on Figure 22a, p. 40). (Note: grain, rift and hardway readings refer to the drill site).

Inset 3 Crows Nest

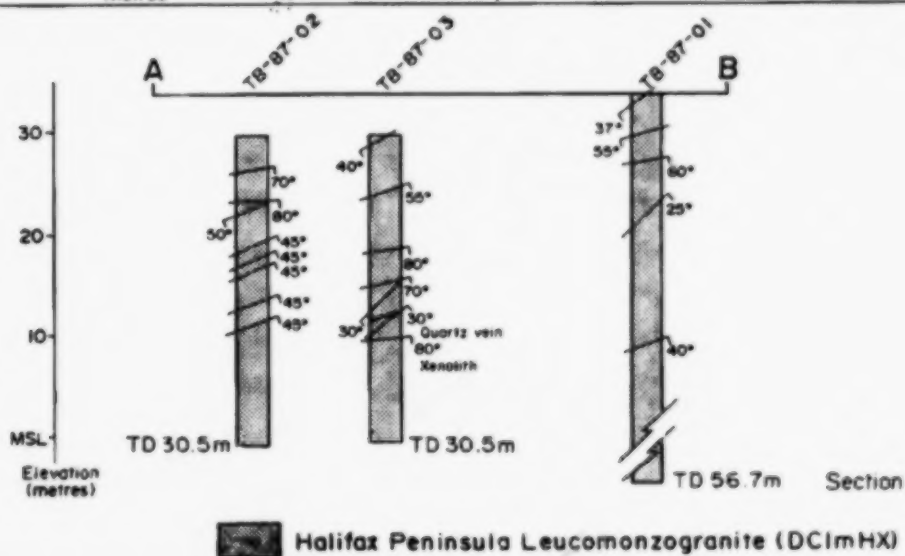
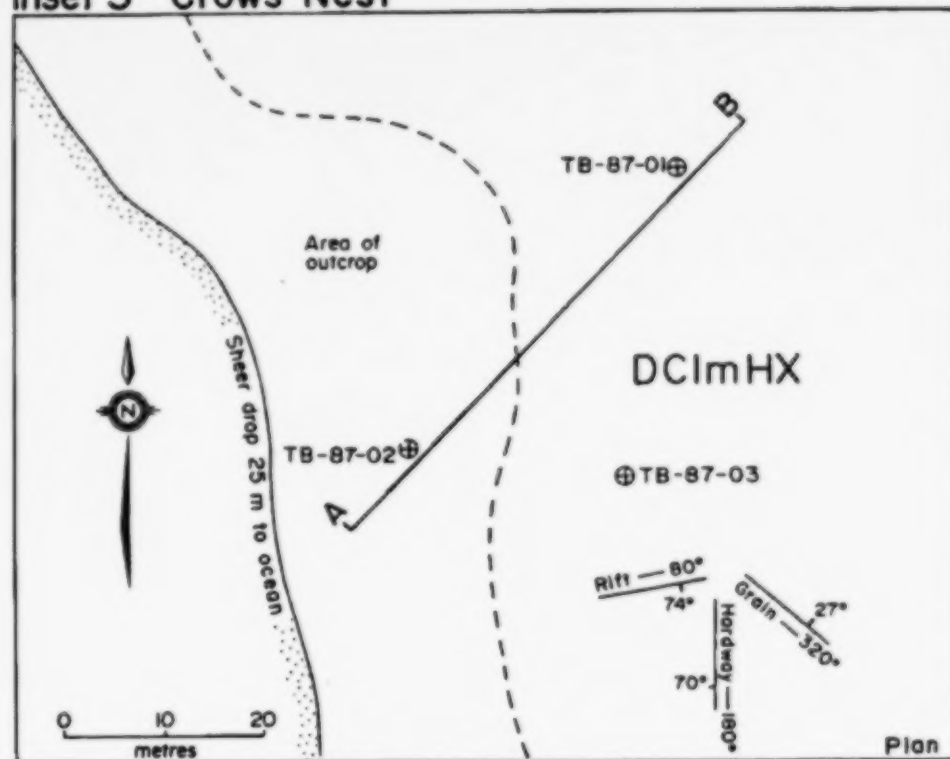


Figure 22d. Detailed location map and section A-B of drillholes TB-87-01 to TB-87-03 (Appendix 1, p. 133), Crows Nest, Terence Bay, Halifax County (11D/05). (Inset 3 on Figure 22a, p. 40). (No occurrence description available).

Commercial Stone Name: IRONSTONE/SLATE, BLACK
County: HALIFAX
Property Name: KING QUARRY, PURCELLS COVE

NTS: 11D/12

Longitude: 63°34'14"

Latitude: 44°36'50"

Sample Number: Not sampled

Date: August 26, 1989

Property Status: Abandoned quarries

Geological Rock Name: Greywacke and slate

Possible Uses: Rubble work, rock walls and ashlar for restoration work

Location Description: Two quarries are located 200 m and 350 m east of Route 253 and 400 m north of Purcells Cove (Fig. 13, p. 22). Faribault (1908a) called this the King Quarry. A small picnic park is located just southeast of the quarries.

Production History: Probably the oldest quarry in Halifax; this stone was used for many government buildings, parts of the Citadel, Martello Tower, Dalhousie University buildings and Saint Mary's University buildings.

Colour: Fresh dark grey; weathered rusty dark grey; variable

Grain Size: Very fine to fine; variable

Texture: Massive to finely laminated; variable

Fabric: Weak

Bedding: Strike 55°, Dip 39°NW; thickness range 10-60 cm, average range 15 cm

Jointing: Regular; moderate

Grain: Strike 146°, Dip 64°SW

Rift: Strike 65°, Dip 62°SE

Hardway: Strike 160°, Dip 71°NE

Potential Quarry Block Size: 1 m x 1 m x 30 cm

Outcrop Exposure: Excellent

Use of Explosives: Black powder

Mineralogy: Very fine grains of quartz and feldspar intermingled with flakes of muscovite and biotite. Pyrite grains up to 2-3 mm are common.

Deleterious Minerals: Pyrite

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 174.067 lbs/ft³, Absorption 0.072%, Compressive strength 31,470 lbs/in², Transverse strength 5,415 lbs/in²

Comments: This rock type is available over much of southern mainland Nova Scotia. Its abundance in the Halifax area made it a natural choice for building material. The most westerly quarry is 250 m long, 50 m wide and 10 m deep. Bedding is generally 10 cm in thickness, although blocks 60 cm in thickness can be quarried. The stone was hauled about 300 m east down to the government wharf for shipment around Point Pleasant to the Halifax waterfront. The second quarry is located 200 m east of the first, is semicircular in shape, 50 m in diameter with a western wall 30 m in height. The stone was moved 150 m east to the government wharf. The Quarry property was, until recently, owned by Dalhousie University. It has been sold and is slated for a residential housing project. The use of the quarries as a source of building stone is therefore precluded.

Commercial Stone Name: MARBLE, WHITE AND BLUE
County: INVERNESS
Property Name: GLENCOE MARBLE OCCURRENCE

NTS: 11F/14

Longitude: 61°15'48"

Latitude: 45°55'25"

Sample Number: Drill core Glencoe 88-1

Date: May 20, 1987

Property Status: Development opportunity

Geological Rock Name: Marble

Possible Uses: Tile, dimension stone, rubble stone, possible filler

Location Description: No actual quarry exists at Glencoe. A reconnaissance of the Glencoe limestone deposit identified a white marble on the eastern extension. The place explored is located on a height of land 600 m north of MacPhail Brook at a point 2.4 km upstream from the Trans-Canada Highway 105 near Upper River Denys (Fig. 23).

Production History: There has not been any production.

Colour: Fresh white to pale bluish white; weathered dark grey; variable

Grain Size: Fine; uniform

Texture: Foliated to massive; variable

Fabric: No

Bedding: Strike 80°, Dip vertical; thickness range 2 mm-1 m

Jointing: Irregular; moderate

Potential Quarry Block Size: 1 m x 1 m x 50 cm

Outcrop Exposure: Good

Use of Explosives: No

Mineralogy: Fine- to medium-grained crystalline marble

Deleterious Minerals: Minor pyrite near granite

Other Features: Marble is interbedded with metasedimentary rock on the northern side of the property. The marble is cut off to the south and east by granite.

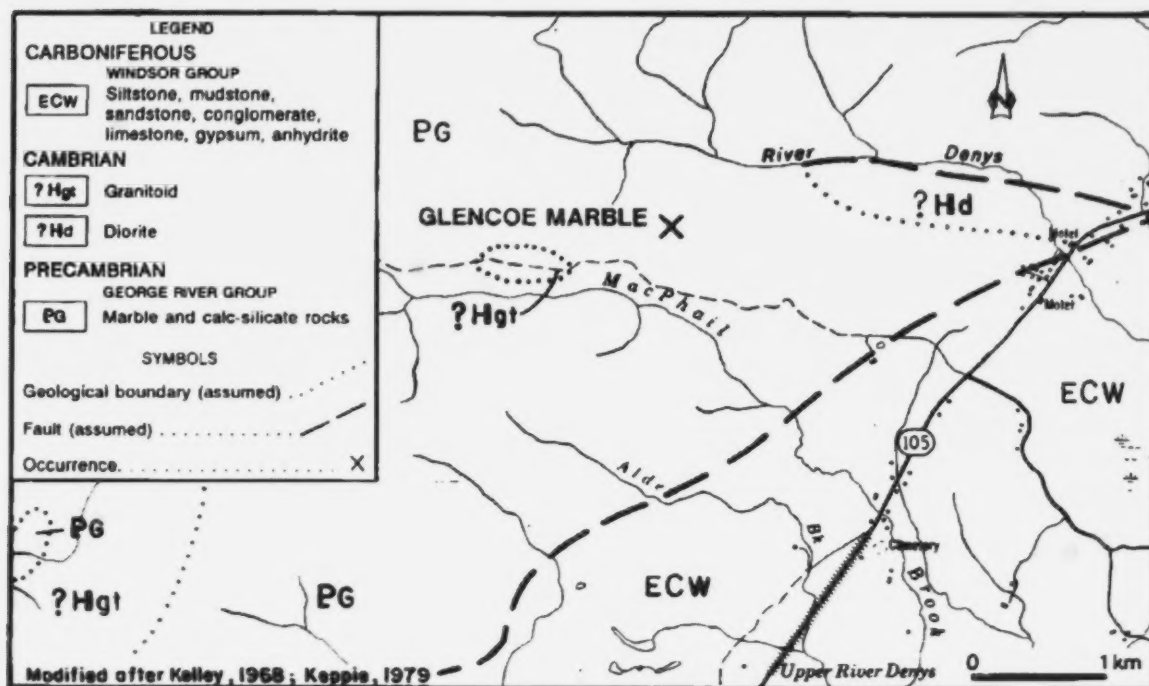


Figure 23. Geological location map for the Glencoe marble occurrence, Inverness County (11F/14).

Diamond Drilling Details: Five holes, totalling 431.6 m, were drilled in a cross-section pattern across the strike of the white marble (Glencoe 88-1 to 88-5; Fig. 24; Appendix 1, p. 113). The southern boundary of the marble is an intrusive contact with a grey, medium grained hornblende granodiorite. The northern boundary is formed by a band of greenish-grey chert and quartzite. The dip of the marble intersected in drilling is vertical and a block 650 m wide and 400 m deep was outlined by the fence. Continuing along strike to the west, outcrops of white marble occur up to 500 m away and previous Glencoe drilling delineated a similar white marble unit on fence 'M' (MacNeil, 1976). Additional diamond drilling and trenching are required in order to determine if the

marble can be traced on strike and if commercial size blocks can be quarried.

Physical Properties: (Parks, 1914): (Typical) Specific weight 169.5 lbs/ft³, Absorption 0.032%, Compressive strength 18,197 lbs/in², Transverse strength n/a

Comments: Although no quarrying for building stone has taken place at this location, surface exposure suggests that blocks of white stone may be available in commercial sizes. Diamond drilling has shown that the marble extends to over 100 m depth. The marble in this deposit is declared a Crown mineral and so is included under the Mineral Resources Act.

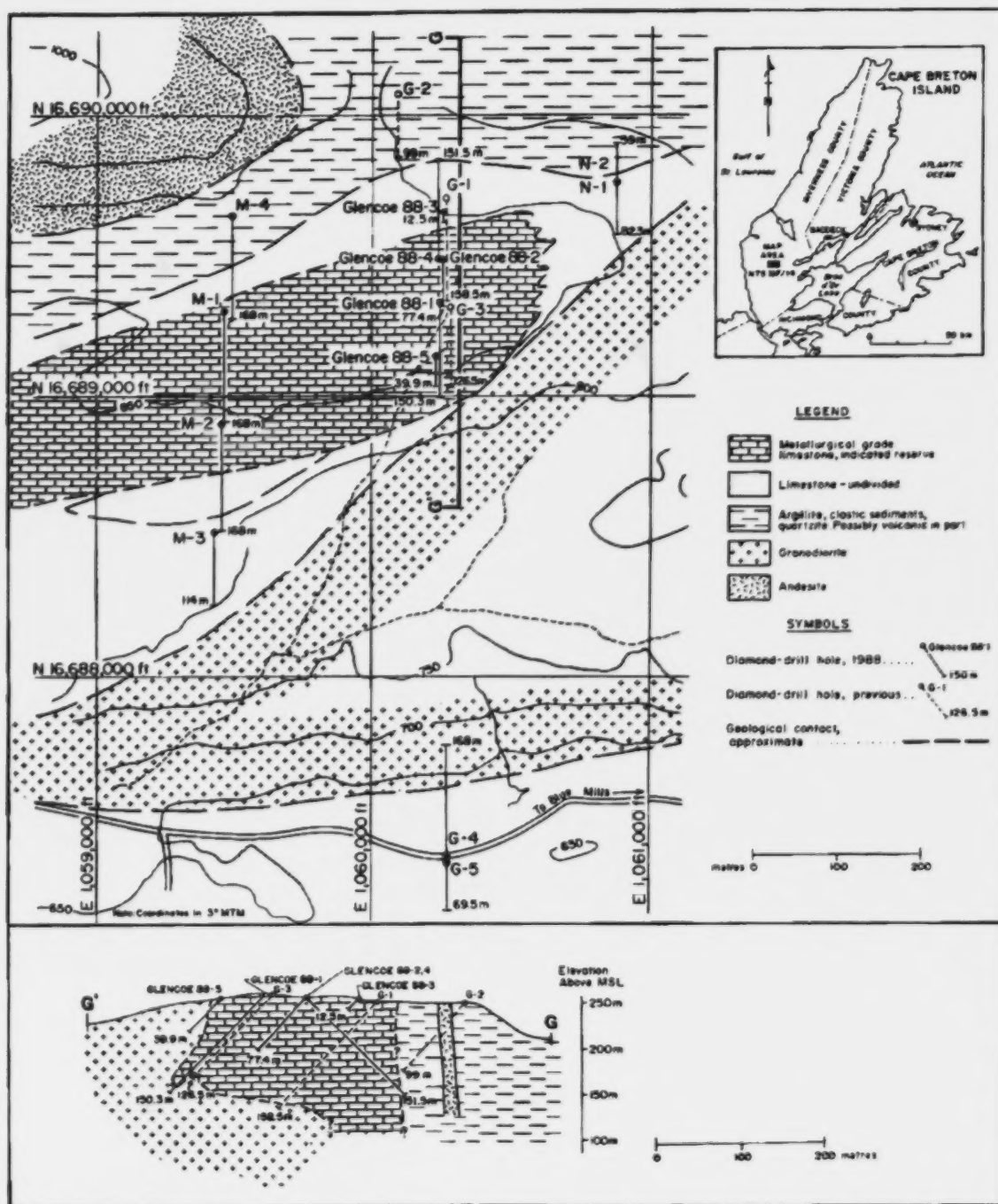


Figure 24. Glencoe marble occurrence, Inverness County, diamond-drill hole locations and section (Glencoe 88-1 to Glencoe 88-5) (11F/14).

Commercial Stone Name: SANDSTONE, BROWN**County: PICTOU****Property Name: BIG MERIGOMISH ISLAND QUARRIES****NTS: 11E/09****Longitude: 62°23'51"****Latitude: 45°40'43"****Sample Number: Not sampled****Date: October 21, 1985****Property Status: Abandoned****Geological Rock Name: Sandstone****Possible Uses: Rubble stone****Bedding:** Strike 90°, Dip 5-20°N; thickness range 1 mm-10 cm**Jointing:** Irregular; moderate**Potential Quarry Block Size:** 50 cm x 1 m x 50 cm**Outcrop Exposure:** Good**Use of Explosives:** No**Other Features:** Sandstone interbedded with conglomerate**Diamond Drilling Details:** Not drilled**Physical Properties:** n/a

Location Description: Outcrops of sandstone were found on the northern side of Big Merigomish Island exactly 4.3 km west of the cemetery at Cemetery Point (Fig. 25). A second quarry location was also examined 350 m west of the first.

Production History: There is no recorded production. The Quarries' locations were taken from Fletcher's (1902a) geological map.

Colour: Fresh grey, olive brown; variable**Grain Size:** Coarse; variable**Texture:** Variable**Fabric:** No

Comments: No actual quarry was identified. Stone was probably removed from the cliff face as required for local construction. The outcrop exposure consists of a 60 cm thick bed of coarse grained, buff sandstone overlain by 3-6 m of red clay till. The rock is highly variable in grain size and texture and may have been suitable for foundation stone. There is little or no potential for any further quarry development here.

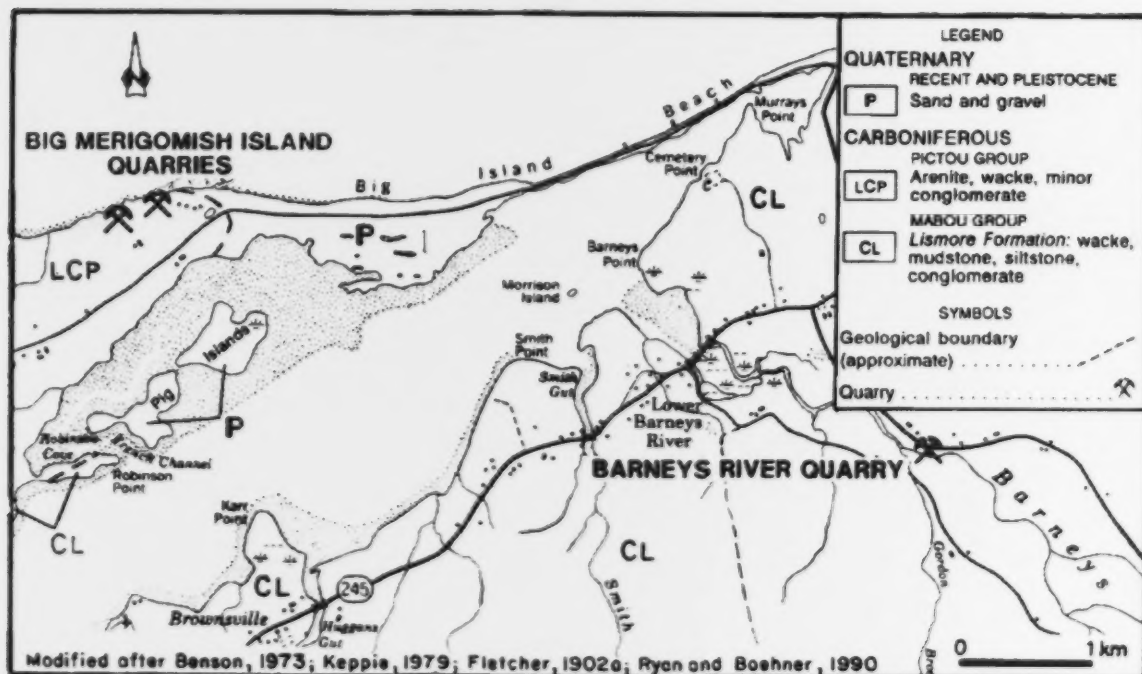


Figure 25. Geological location map for the Big Merigomish Island and Barneys River Quarries, Pictou County (11E/09).

Commercial Stone Name: SANDSTONE, BROWN
County: PICTOU
Property Name: SEAFOAM QUARRIES

NTS: 11E/15

Longitude: 62°56'05"

Latitude: 45°47'06"

Sample Number: 85-06-22, Box 1; 85-06-23, Box 1

Date: September 22, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Rubble stone, ashlar

Jointing: Irregular; moderate

Potential Quarry Block Size: 2 m x 1 m x 50 cm

Outcrop Exposure: Good

Use of Explosives: No

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Location Description: Two quarries were located by Fletcher (1902b) on the Northumberland Strait 600 m east of Kirks Brook near Seafoam (Fig. 26). They are 150 m apart as indicated by Fletcher (1902b).

Production History: None recorded

Colour: Fresh reddish brown, grey; variable

Grain Size: Medium; uniform

Fabric: No

Bedding: Dip horizontal; thickness range 5 mm-20 cm, average range 10 mm

Comments: The old Seafoam Quarries have long since eroded away. However, high up in the bank, about 10 m above sea level, large blocks of sandstone are sloughing off the bank. The stone is thinly laminated, but seems to stay together because some blocks up to 1 m thick were observed lying at the base of the bank. The rocks are flat lying with the thickest stone near the top. The area south of the cliffs is presently under cultivation, thereby limiting quarry development in that direction. Also the overall poor quality of the stone makes additional development unlikely.



Figure 26. Geological location map for the Seafoam and Toney River Quarries, Pictou County (11E/15).

Commercial Stone Name: SANDSTONE, BROWN
County: PICTOU
Property Name: TONEY RIVER QUARRY

NTS: 11E/15
Longitude: 62°53'20"
Latitude: 45°45'59"
Sample Number: 85-06-21 Box 1
Date: September 22, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Rubble stone

Location Description: Fletcher (1902b) located the occurrence on the eastern side of Toney River, 1.6 km upstream (south) from Route 6 (Fig. 26).

Production History: Parks (1914) referred to the 'Chambers Block' in New Glasgow built from Toney River sandstone. He further stated that the Quarry was not in operation at the time so therefore was not visited.

Colour: Fresh red brown and grey; variable
Grain Size: Medium; uniform
Fabric: No

Bedding: Dip horizontal; thickness range 5-30 cm, average range 15 cm
Jointing: Irregular; moderate
Potential Quarry Block Size: 1 m x 50 cm x 20 cm
Outcrop Exposure: Good
Use of Explosives: No

Deleterious Minerals: Organic streaks

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: Little evidence of the Toney River Quarry was found on the Toney River bank. Some sandstone outcrops halfway up the 20 m bank in the place where the Quarry was located by Fletcher (1902b). The stone is thinly bedded with organic streaks. On the lower levels the stone is grey and higher up it is red brown. Judging from the size of blocks at the site, thicknesses of stone over 30 cm are rare. Based upon the poor quality of stone exposed, this site has very limited development potential.

Commercial Stone Name: SANDSTONE, BROWN
County: PICTOU
Property Name: WEST BRANCH FRENCH RIVER QUARRY 2, MERIGOMISH

NTS: 11E/09
Longitude: 62°25'42"
Latitude: 45°36'47"
Sample Number: Not sampled
Date: October 24, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Rubble stone, possible ashlar

Bedding: Strike 50°, Dip 46°NW; thickness range 20 cm-1 m, average range 20 cm
Jointing: Irregular; moderate to intensive
Potential Quarry Block Size: 1 m x 1 m x 50 cm
Outcrop Exposure: Good
Use of Explosives: No

Deleterious Minerals: Plant fragments

Location Description: The Quarry is located on the West Branch French River exactly 2.23 km south-southwest of the Canadian National Railway bridge over the French River. It is located on the western bank of the West Branch French River at a sharp bend (Fig. 27).

Other Features: Sandstone is interbedded with mudstone

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Production History: No production has been recorded. It is located on Fletcher's (1902a) geological map.

Comments: No old quarry was found, but the sandstone was found exposed on a 20 m high face. The stone is severely tilted and broken along bedding planes, and several large blocks have fallen off the face into the West Branch French River, some of which are in the 3-4 t range. Access to the site is difficult because of the deep River gorge and lack of a road within 1 km of the site.

Colour: Fresh grey brown; uniform
Grain Size: Medium; uniform
Texture: Uniform
Fabric: No

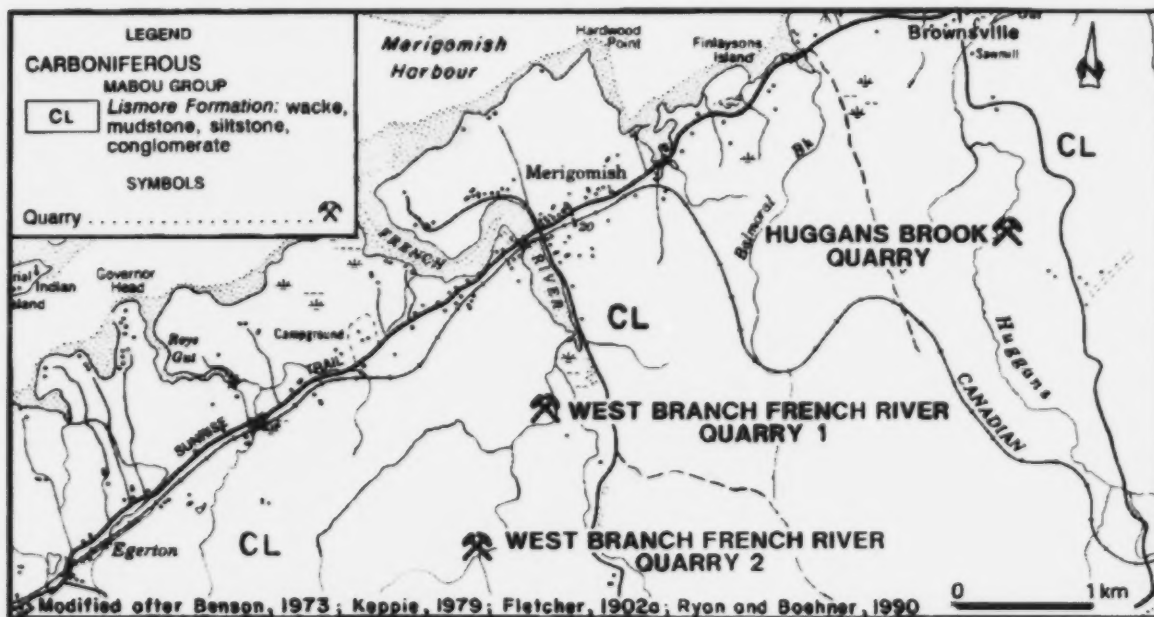


Figure 27. Geological location map for the West Branch French River Quarry 1 and Quarry 2 and Huggans Brook Quarry, Pictou County (11E/09).

Commercial Stone Name: SANDSTONE, BUFF
County: PICTOU
Property Name: BARNEYS RIVER QUARRY,
LOWER BARNEYS RIVER

NTS: 11E/09
Longitude: 62°19'00"
Latitude: 45°39'48"
Sample Number: 85-06-40 Box 1
Date: October 25, 1985
Property Status: No evidence of quarrying found
Geological Rock Name: Sandstone
Possible Uses: Rubble

Location Description: The reported Quarry was located on the northeastern bank of Barneys River, 450 m southeast of where Gordon Brook joins Barneys River (Fig. 25, p. 49). It is approximately midway between Lower Barneys River and Avondale.

Production History: Production history is unknown. This is a miscellaneous occurrence taken from Fletcher (1902a).

Colour: Fresh buff tan; weathered buff; variable
Grain Size: Medium; uniform
Fabric: No
Bedding: Strike 45°, Dip 10-15°NW; thickness range 2-20 cm, average range 5 cm

Jointing: Irregular; moderate
Potential Quarry Block Size: 50 cm x 30 cm x 30 cm
Outcrop Exposure: Fair
Use of Explosives: No

Mineralogy: Quartzose sandstone with quartz and feldspar grains
Deleterious Minerals: No

Other Features: Due to the thinly laminated nature of the outcrop, quarrying of dimension blocks would be impossible.

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: Evidence of quarrying was not found, although extensive rubble was seen. Most bedding plane parting surfaces are thinner than 3 cm. Near the bottom of the 10 m bluff some blocks were found up to 20 cm in thickness. This stone is not suitable for quarrying for building stone.

Commercial Stone Name: SANDSTONE, BUFF
County: PICTOU
Property Name: FOUR MILE BROOK QUARRY

NTS: 11E/10
Longitude: 62°50'26"
Latitude: 45°35'52"
Sample Number: 85-06-41 Box 1
Date: October 25, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Rubble stone

Fabric: No
Bedding: Strike 0°, Dip 5°E; thickness range 10-15 cm, average range 12 cm
Jointing: Irregular; limited to moderate
Grain: Strike 165°, Dip vertical
Potential Quarry Block Size: 1 m x 50 cm x 20 cm
Outcrop Exposure: Good
Use of Explosives: No

Location Description: The Quarry location was taken from Fletcher's (1903) geological map. It is located on the northern side of Four Mile Brook, 800 m northwest of Route 376 (Fig. 28).

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Production History: Production history is unknown, but it is reasonable to assume that stone for local building construction only was quarried here.

Comments: Nothing remains of the old Quarry workings although there is good outcrop exposure on a 10 m high river bank. The stone is thinly bedded although jointing is fairly widespread. Development of this Quarry is unlikely because it is thinly bedded.

Colour: Fresh tan buff; weathered brown tan; uniform

Grain Size: Fine to medium; variable

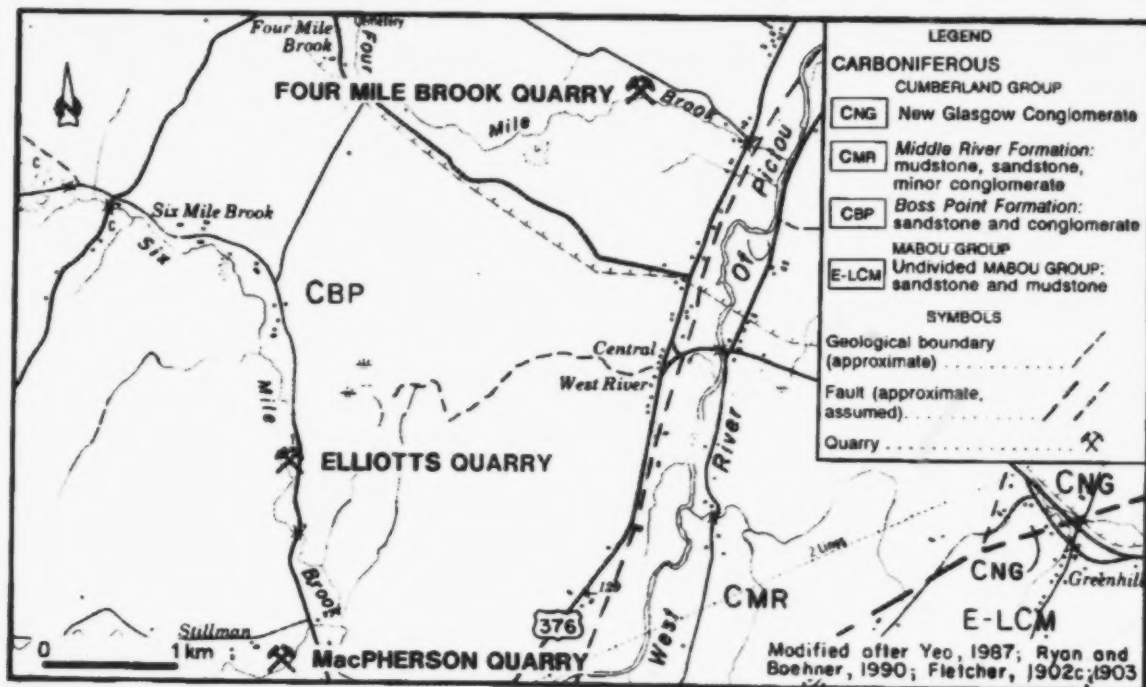


Figure 28. Geological location map for the Four Mile Brook, Elliotts and MacPherson Quarries, Pictou County (11E/10).

Commercial Stone Name: SANDSTONE, BUFF
County: PICTOU
Property Name: GAMMON ANDWEIR QUARRY, NEW GLASGOW

NTS: 11E/10
Longitude: 62°36'21"
Latitude: 45°35'24"
Sample Number: 85-01-12 Box 1
Date: September 21, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Ashlar, rubble stone

Location Description: The old Quarry is located at Linacy, 100 m north of Route 4, 2.7 km east of the traffic lights at the intersection of Route 4 and East River Road in New Glasgow (Fig. 29).

Production History: The Quarry is identified on Fletcher's (1902a) geological map and Parks (1914) wrote about the Quarry. At that time about 230 m³ (300 yd³) of building stone were being produced.

Colour: Fresh olive buff; weathered buff; uniform
Grain Size: Medium; uniform; variable
Texture: Uniform
Fabric: No
Bedding: Strike 90°, Dip 45°N
Jointing: Regular; moderate
Grain: Strike 160°, Dip 72°E
Rift: Strike 22°, Dip vertical
Hardway: Strike 90°, Dip vertical
Potential Quarry Block Size: 1 m x 3 m x 1 m

Outcrop Exposure: Good
Use of Explosives: Probably black powder

Deleterious Minerals: No

Other Features: The owner of the property drilled a well in the old Quarry and cut 20 m of sandstone underlain by conglomerate.

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 145.139 lbs/ft³, Absorption 5.006%, Compressive strength 16,300 lbs/in², Transverse strength 1,537 lbs/in²

Comments: The Quarry site is on land owned by Mr. John Schumacher who has moved a mobile home home to the site. He has backfilled the old Quarry in part and has made a fish pond in the remainder. A small outcrop exposure 2-3 m high remains. The sandstone dips steeply to the north thereby limiting development in that direction. The joint pattern is sufficiently wide to allow the extraction of blocks with bed heights greater than 1 m. According to Parks (1914), "... pieces from three to four feet square and from ten to fifteen feet long have been quarried". It is doubtful if any further production can take place in this Quarry because the area has been settled with residential housing along strike and the stone plunges to depth rapidly to the north.

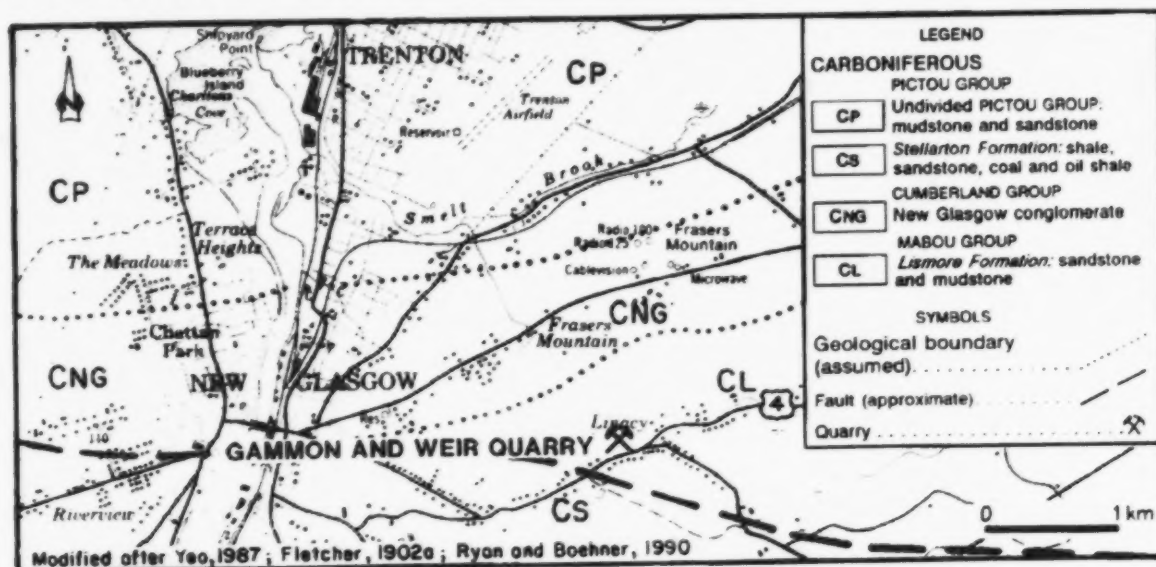


Figure 29. Geological location map for the Gammon and Weir Quarry, Pictou County (11E/10).

Commercial Stone Name: SANDSTONE, BUFF (SCOTSBURN BUFF)
County: PICTOU
Property Name: MACKENZIE, QUARRY, HARDWOOD HILL

NTS: 11E/10

Longitude: 62°50'06"

Latitude: 44°39'41"

Sample Number: Drill core McK-86-03; Sample 2, NSDME Sample Catalogue 89-01

Date: November 1987

Property Status: Not producing

Geological Rock Name: Sandstone

Possible Uses: Dimension stone, ashlar, paving stone

Location Description: The MacKenzie Quarry is located on the property of L. B. MacKenzie, Hardwood Hill, and is accessed by a private road which leads off the gravel road from Scotsburn to Heathbell. The entrance is exactly 1.45 km northeast of the intersection of the Heathbell road and Route 256 at Scotsburn. The Quarry is precisely 0.95 km towards 217° from the Hardwood Hill microwave tower (Fig. 30).

Production History: The Quarry was opened in 1987 to be used as a source of fill for the Common User

Dock Construction project in Pictou. Approximately 100 000 t of stone were removed exposing sandstone which perhaps could be used as building stone (Dickie, 1988). To date no building stone production has occurred.

Colour: Fresh olive buff; weathered buff; variable

Grain Size: Medium; uniform

Fabric: No

Bedding: Dip 10°SE

Jointing: Irregular; moderate

Potential Quarry Block Size: Not determined

Outcrop Exposure: Poor to good

Use of Explosives: High explosives

Mineralogy: Similar to the McKeens Quarry (p. 59). Quartz and feldspar grains in a cement comprised of calcium carbonate (minor), silica and clay.

Deleterious Minerals: Minor organic

Other Features: See Diamond Drilling Details below. In the most northerly hole the sandstone had

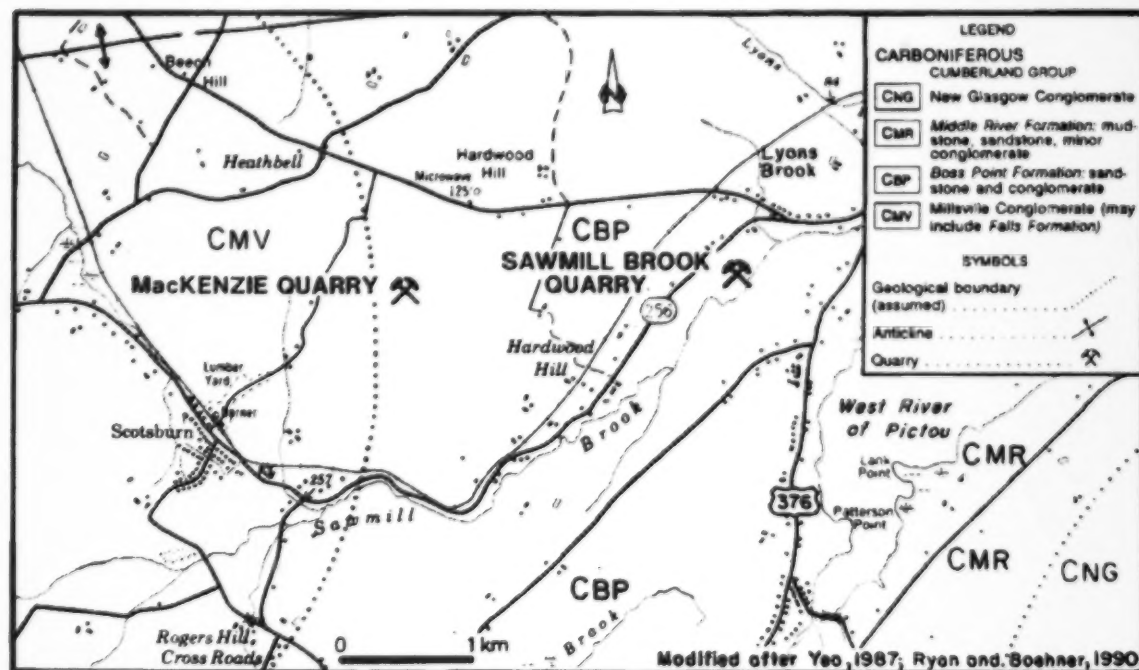


Figure 30. Geological location map for the MacKenzie and Sawmill Brook Quarries, Pictou County (11E/10).

a bleached appearance and the calcareous channel lag was much more dense than in the other two holes.

Diamond Drilling Details: Three holes spaced 100 m apart were collared in a north-south line on the height of land where the proposed quarry was to be located (Fig. 31; Appendix 1, p. 118). All holes were 30.5 m deep and core size was BQ. The core was logged in detail and sampled. The top 18.2 m of holes McK-86-01, McK-86-02 and McK-86-03 were selected for

sampling. Alternate pieces of core were split and collected in plastic bags. In addition, a 20 cm long, unsplit piece of core was collected from a typical sandstone unit from each hole for compressive and transverse strength determination. The results of the testing are provided in detail in Dickie (1986). Hole McK-86-01 was collared in 6.6 m of medium grained, brown sandstone underlain by 2.2 m of calcareous, lag breccia and a fine- to medium-grained, grey to brown sandstone to a depth of 20.3 m. Hole McK-86-02,

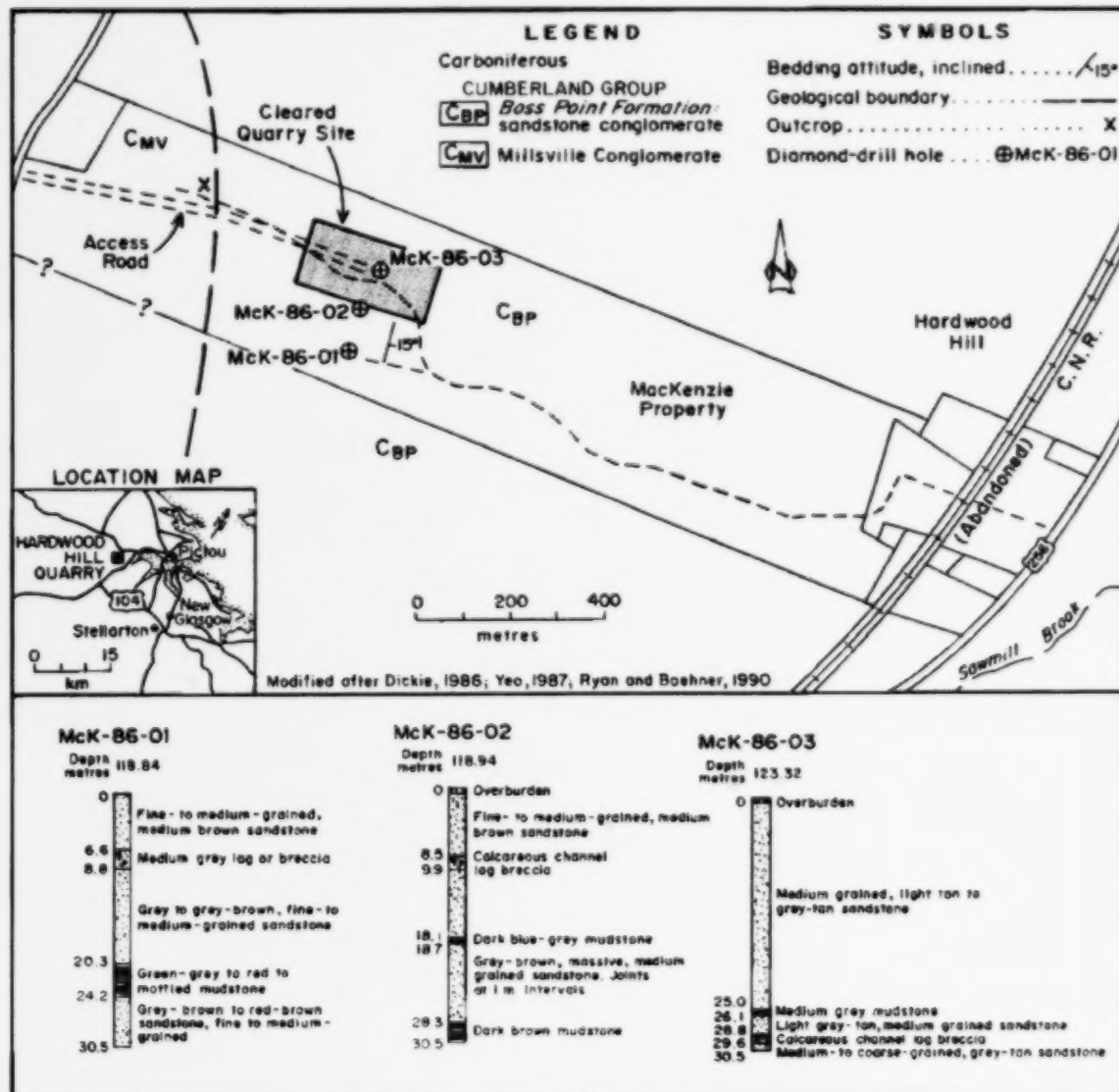


Figure 31. MacKenzie Quarry, Pictou County, general geology and diamond-drill hole locations and columns for McK-86-01 to McK-86-03 (11E/10).

collared 100 m north of McK-86-01, cut predominantly buff-brown, fine- to medium-grained sandstone interbedded with calcareous channel lag from 8.5-9.9 m, from 15.0-15.3 m and from 21.3-21.6 m. The hole terminated in dark brown mudstone from 28.3-30.5 m. Hole McK-86-03, collared 100 m north of McK-86-02 cut 10 m of light tan, medium grained sandstone. Minor calcareous, channel lag occurred over the intervals 10.6-10.9 m, 12.3-13.0 m, 14.3-14.8 m, 21.9-22.3 m and 28.8-29.6 m. A minor unit of massive mudstone was cut from 25-26.1 m. The best sandstone was found to occur in hole McK-86-03 from surface to a depth of 10.6 m. Although the stone comes apart along bedding planes in drill core, bed heights may be sufficient to allow the quarrying of commercial size blocks as a quarry face is developed.

Physical Properties: (Parks, 1914): Compressive

strength 8,520 lbs/in² (wet), Transverse strength 962 lbs/in² (wet)

Comments: The MacKenzie Quarry has not produced dimension stone blocks at the time of writing this report. Approximately 100 000 t of blasted bank stone has been removed exposing a 10-15 m high working face. The variability of colour and grain size noted in the drill core is apparent in the Quarry. Due to the fact that high explosives were used to extract the stone, a considerable amount of excavation is required to properly expose a bed from which dimension blocks can be obtained. Due to the apparent large volume of sandstone available and the remote nature of the Quarry, this deposit warrants further investigation to determine if a bed is present which could be economically developed for building stone.

Commercial Stone Name: SANDSTONE, BUFF
County: PICTOU
Property Name: MCKEENS QUARRY, PICTOU

NTS: 11E/10
Longitude: 62°41'31"
Latitude: 45°41'29"
Sample Number: 85-01-01 Box 1
Date: September 7, 1985
Property Status: Active
Geological Rock Name: Sandstone
Possible Uses: Dimension blocks, ashlar, rubble stone

Colour: Fresh buff and grey; weathered buff; variable
Grain Size: Medium to coarse; variable
Texture: Variable
Fabric: No
Bedding: Strike 157°, Dip 5°NE; thickness range 20 cm-3.2 m, average range 25 cm
Jointing: Irregular; moderate
Grain: Strike 40°, Dip vertical
Rift: Strike 70°, Dip 80°S
Potential Quarry Block Size: 2 m x 1 m x 50 cm
Outcrop Exposure: Good
Use of Explosives: Black powder and dynamite

Location Description: The old McKeens Quarry (Fletcher, 1903) is located 500 m north of the Pictou to Braeshore road (Fig. 32). The access road is 300 m east of the Golf Course Club House.

Production History: This is one of the oldest quarries in Nova Scotia and was producing sandstone in the mid 1800s under the name Fogo Quarry. It produced sandstone continuously until the 1940s when it closed. It is presently producing rock fill and armour stone.

Mineralogy: Quartz grains of 0.25 mm scattered throughout a finer matrix of quartz and feldspar grains. The stone contains a high amount of cement consisting of clays, calcium carbonate and iron oxide.
Deleterious Minerals: Muscovite mica and organic stain.

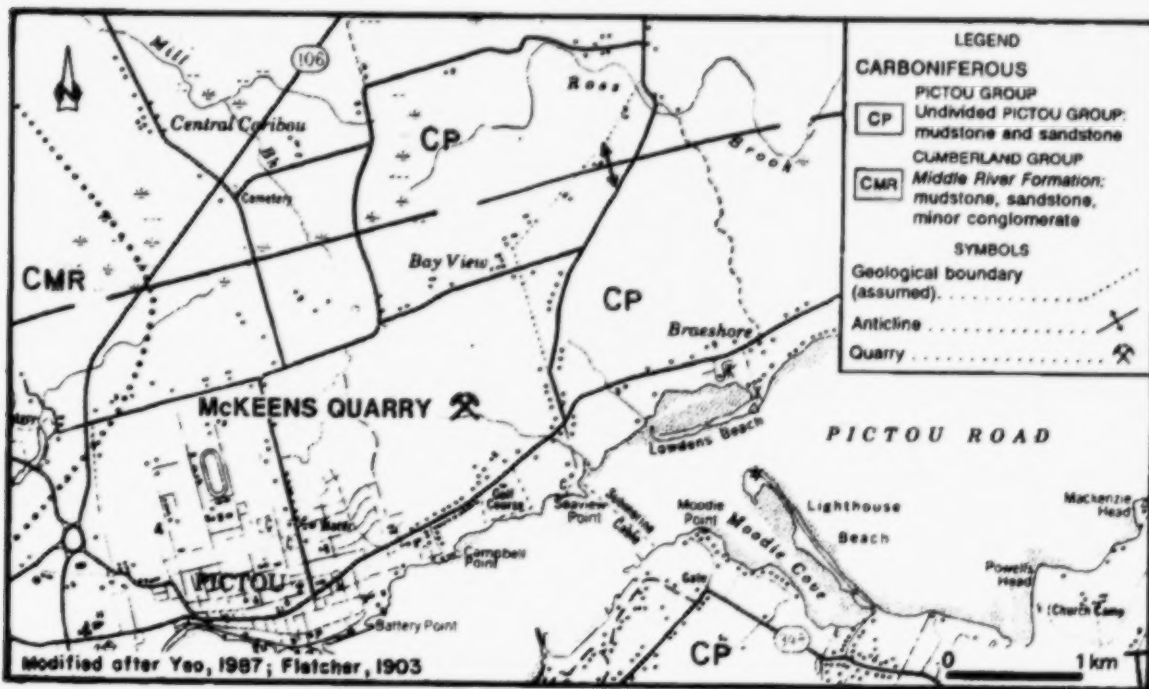


Figure 32. Geological location map for the McKeens Quarry, Pictou County (11E/10).

Diamond Drilling Details:

Three holes (Dickie, 1987) totalling 143.7 m were drilled along strike, spaced 60 m apart (CRP-86-01 to CRP-86-03; Figs. 33 and 34; Appendix 1, p. 99). Holes were collared in the present upper Quarry floor which is 5 m above the base of the last sandstone bed quarried for building stone. Medium- to coarse-grained, olive-grey sandstone was cored to depths ranging from 6-12 m. This was underlain by 6 m of red-brown, massive mudstone and siltstone. Below the siltstone over 25 m of mixed olive, buff and grey, medium- to coarse-grained sandstone was cored (Fig. 35).

Physical Properties: (Parks, 1914): Specific weight 141.652 lbs/ft³, Absorption 6.853%, Compressive strength 10,348 lbs/in², Transverse strength 869 lbs/in².

Comments: Approximately 8 m of sandstone is exposed under 2 m of overburden on the northern face of McKeens Quarry. In recent years the stone has been used for armour stone and rip rap. High explosives were used in this phase of the work, shattering the stone. The old Quarry is located 30 m south of the main face, is 5 m deep and was filled with water in 1985. Since that time it has been back filled with quarry debris. In the past, a rail spur connected the Quarry to the Canadian National Railway tracks near the Pictou shipyard.

Many notable buildings (Dickie, 1988) were constructed using this stone including the Charlottetown Legislature, parts of the New Glasgow

Town Hall, New Glasgow, and many stone buildings in the Town of Pictou. According to Parks (1914) the stone was awarded a commemorative medal at the Colonial and Indian Exhibition in 1886. The McKeens Quarry stone, as seen on buildings in Pictou, weathers to a fine, uniform buff colour, particularly on worked surfaces. As is typical with sandstones, it has a strong tendency to exfoliate when face bedded. There is a large volume of sandstone remaining on this property and measures should be taken to ensure that the building stone resource is not destroyed.

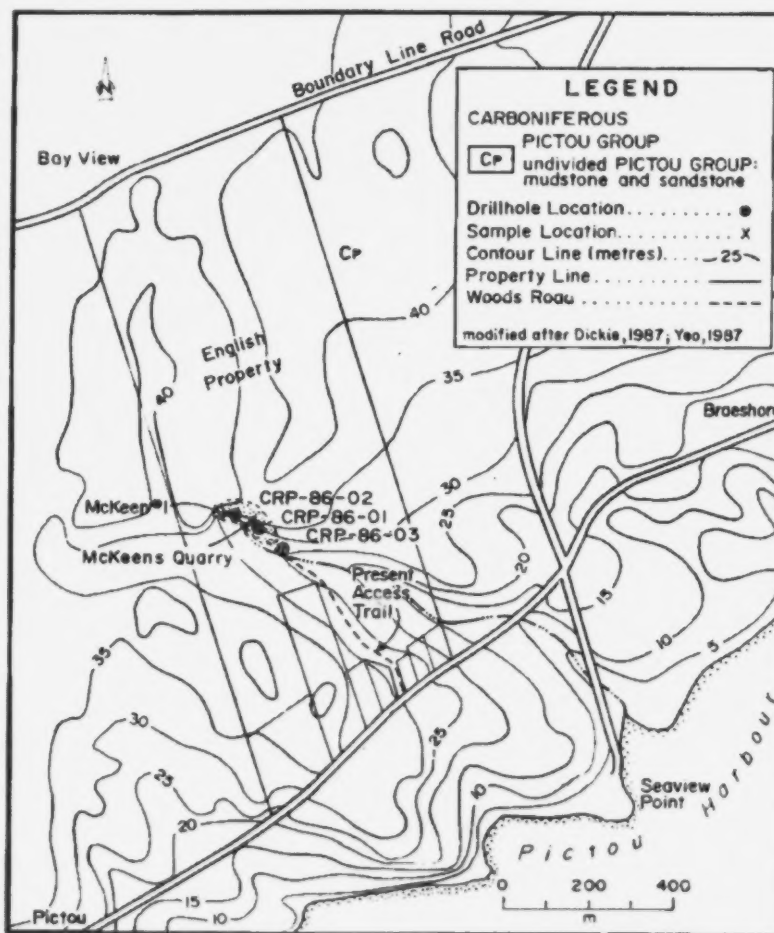


Figure 33. McKeens Quarry, Pictou County, general geology and location map for CRP-86-01 to CRP-86-03 (11E/10).

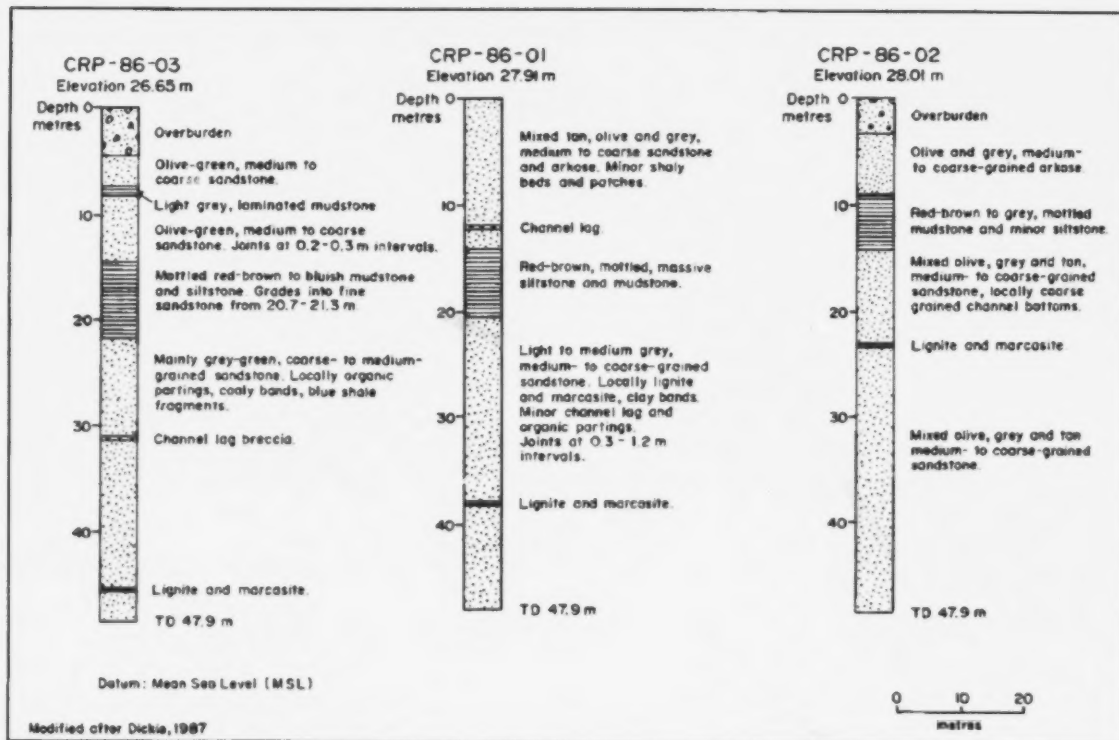


Figure 34. McKeens Quarry, Pictou County, detailed diamond-drill hole columns for CRP-86-01 to CRP-86-03 (11E/10).

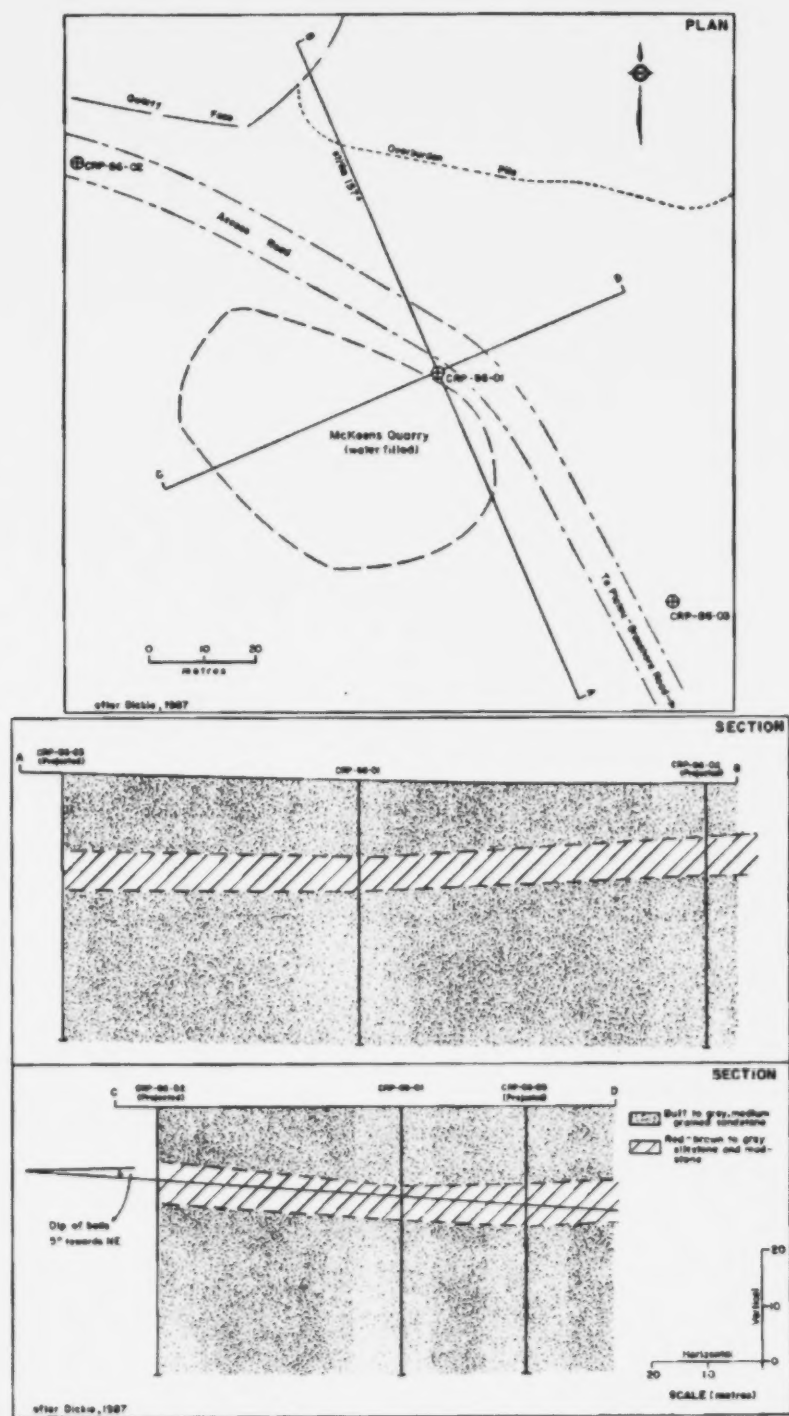


Figure 35. McKeens Quarry, Pictou County, diamond-drill hole locations (CRP-86-01 to CRP-86-03) and longitudinal- and cross-sections (11E/10).

Commercial Stone Name: SANDSTONE, BUFF**County:** PICTOU**Property Name:** SAWMILL BROOK QUARRY, PICTOU**NTS:** 11E/10**Longitude:** 62°48'03"**Latitude:** 45°39'48"**Sample Number:** 85-02-02 Box 1**Date:** September 8, 1989**Property Status:** Abandoned**Geological Rock Name:** Sandstone**Possible Uses:** Ashlar, rubble stone

Location Description: The Sawmill Brook Quarry is located 300 m southeast of Route 256, 1 km southwest of Lyons Brook, Pictou County (Fig. 30, P. 56). The Quarry is 50 m in diameter, located on the western bank of Sawmill Brook, 900 m upstream from where Route 376 crosses the Brook.

Production History: The Quarry was first opened around 1830 by John McKenzie. It was subsequently owned and operated by the Acadia Company from 1847-1859. Stone was shipped primarily to the United States market at this time. A Mr. McKenzie apparently ran the Quarry and took over after the Acadia Company left. He continued to quarry stone until the late 1800s at which time it was abandoned.

Colour: Fresh olive to buff; uniform**Grain Size:** Medium; uniform**Bedding:** Strike 20-30°, Dip 25°SE; thickness range 50 cm-2 m, average range 1 m**Jointing:** Irregular; moderate**Potential Quarry Block Size:** 1 m x 1 m x 50 cm**Outcrop Exposure:** Fair**Use of Explosives:** No**Deleterious Minerals:** No

Exploration and Diamond Drilling Details: Pumping: The Drilling Division of the Nova Scotia Department of Mines and Energy organized and carried out the pumping operation. A 1200 gallon per minute pump was rented and set up on site. A total of about 12 hours was required to pump the Quarry dry over a three day period. Once the water was removed the Quarry floor was plane table mapped and sampled (Fig. 36).

The stone exposed in the Quarry floor was quarried from two main beds. The rock strikes northeast and dips 20°SE. Therefore, the upper bed was quarried on the eastern side of the hole and the lower bed was quarried on the western side. The two beds are separated by about 3 m of grey shale. The upper bed consists of a massive, fine- to medium-grained, olive-green sandstone with bed thicknesses up to 2.8 m exposed. This stone is identical to that used in the construction of the Taylor House in Lyons Brook, Pictou County. The lower bed consists of grey to tan coloured, fine- to medium-grained sandstone with organic partings near the top. Bed heights of up to 2-2.5 m were observed.

Diamond Drilling: A red-brown sandstone was cored in a diamond-drill hole at Sawmill Brook in March 1986 at a depth of about 15 m (SMB-86-01; Fig. 36; Appendix 1, p. 124). Projecting a 20° dip downslope from this location to the Quarry, places the top of the red-brown stone at about 15 m below the water level of the Quarry. The presence of the red-brown stone was confirmed at 18.9 m below the collar of SMB-86-04. I had previously anticipated this stone to be present much nearer the surface. However, inconsistencies in dip angles of the sandstone beds made it impossible to accurately predict its depth. The colour and texture of the red-brown sandstone were very similar in SMB-86-01 and SMB-86-04. SMB-86-05 was collared 46 m west of SMB-86-01 to determine where this stone would subcrop to the west. The bottom 60 cm of the red-brown stone were intersected in the top of this hole. The drill was then moved to SMB-86-06 where 3 m (true thickness) of a finely laminated red-brown sandstone were intersected, at a depth of 6.4 m below surface and 1.5 m below the base of the overburden (4.9 m). Therefore, knowing the strike of the rock, the subcrop projection of the red-brown stone was outlined. Judging from the condition of the drill core in the top 1.2 m of sandstone, there could be considerable wastage of stone due to weathering of the bedrock surface.

Physical Properties: n/a



Figure 36. Geological plane table map and drill sections of Sawmill Brook Quarry, Pictou County (Sections A-B and C-D) (SMB-86-01 to SMB-86-06) (11E/10). (Location for SMB-86-04 not surveyed).

Comments: The dip of the olive stone quarried in the past, severely limits the volume of stone left in the Quarry. The reserve is cut off to the northeast and east by Sawmill Brook. There is no sandstone suitable for

quarrying to the west due to the presence of a thick mudstone unit. The Quarry is part of a residential subdivision thereby eliminating any further extraction of building stone.

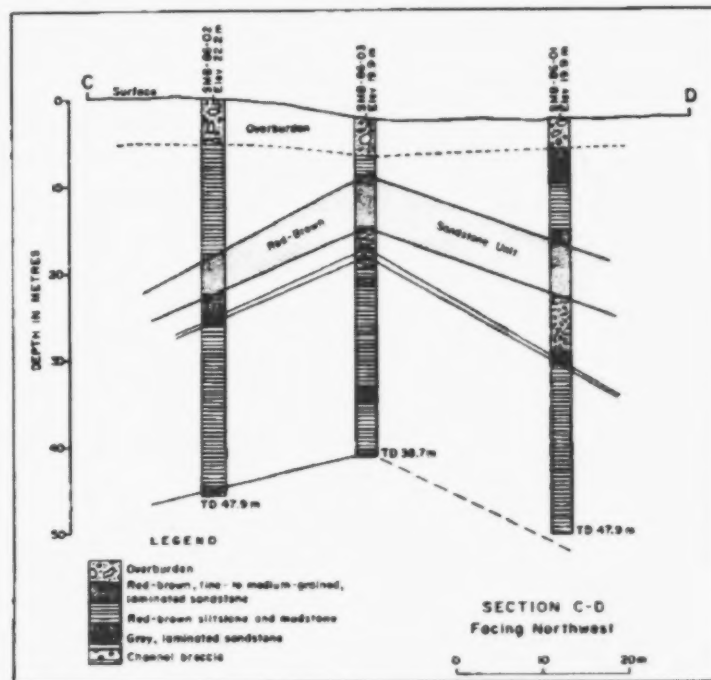
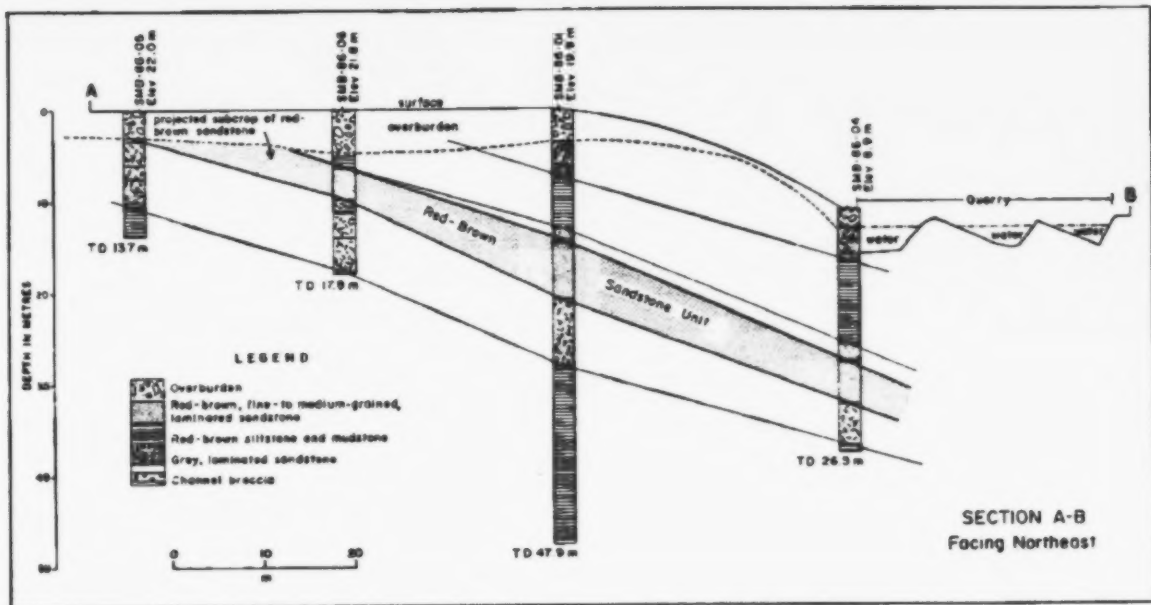


Figure 36. Continued.

Commercial Stone Name: SANDSTONE, GREY AND BROWN
County: INVERNESS
Property Name: MCKAYS POINT OCCURRENCE, JUDIQUE

NTS: 11F/13

Longitude: 61°30'33"

Latitude: 45°54'30"

Sample Number: Not Sampled

Date: September 20, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Not suitable for building stone

Bedding: Strike 45°, Dip 50-60°NW; thickness range 5-15 cm, average range 7 cm

Jointing: Irregular; moderate

Potential Quarry Block Size: 1 m x 15 m x 20 cm

Outcrop Exposure: Good

Use of Explosives: No

Deleterious Minerals: Calcareous

Location Description: No actual quarry exists at this location. Stone blocks were taken from the beach at McKays Point 2 km northwest of Judique (Gillis, personal communication, 1986) (Fig. 37).

Production History: Mr. John Gillis of McKays Point said stone was cut and taken from the beach in 1924 to build the Judique church. No other production took place.

Colour: Fresh grey and brown; variable

Grain Size: Medium; variable

Fabric: No

Other Features: The sandstone is interbedded with thick blue and grey shale units. There would have been no stone quarried here except stone that was exposed on the shoreline.

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: The only reason that this stone was used is because it was well exposed and accessible on the shore. The poor quality and thin beds make further quarry development impossible.

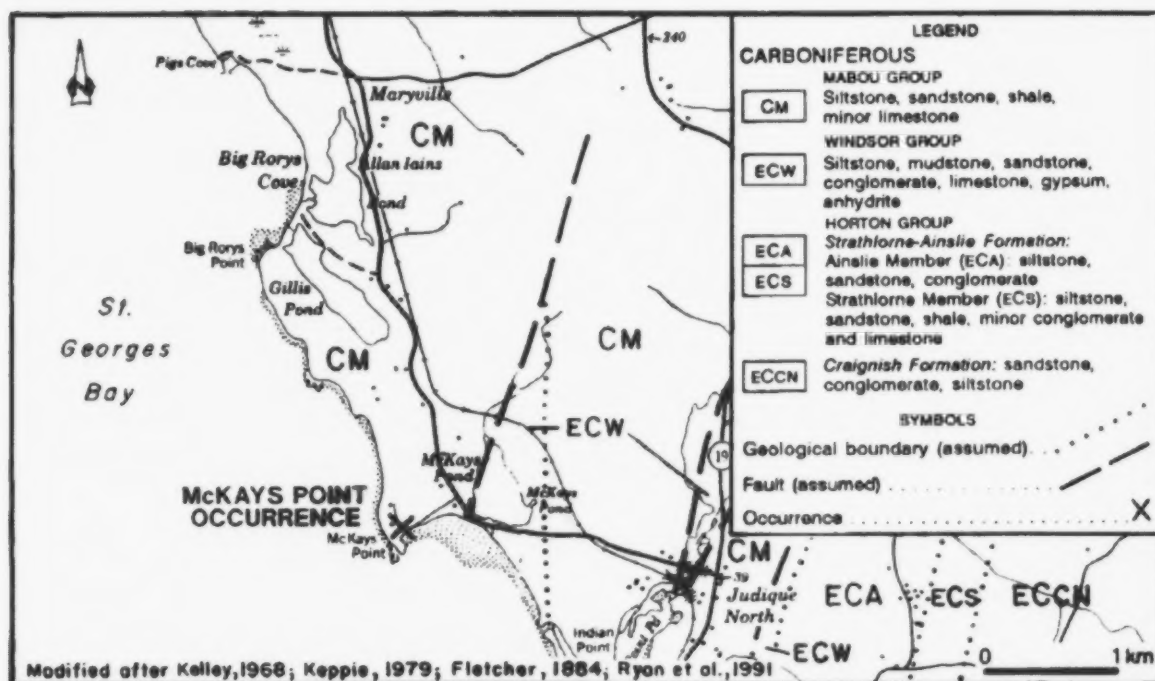


Figure 37. Geological location map for the McKays Point occurrence, Inverness County (11F/13).

Commercial Stone Name: SANDSTONE, GREY AND BROWN
County: VICTORIA
Property Name: GRANT QUARRY, BOULARDERIE ISLAND

NTS: 11K/01

Longitude: 63°29'08"

Latitude: 46°10'25"

Sample Number: Not sampled

Date: October 5, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Rough foundation stone, rubble stone

Location Description: The Grant Quarry is located at Boularderie West on a small brook which runs into St. Andrews Channel. The Quarry is 200 m south of the road and 200 m west of the Victoria County-Cape Breton County line (Fig. 38).

Production History: Although Parks (1914) mentioned the Grant Quarry, it was not in operation at that time nor has any production taken place since then.

Colour: Fresh yellowish grey; weathered yellowish brown; variable

Grain Size: Medium to coarse; variable

Fabric: No

Bedding: Strike 70°, Dip 5°N; thickness range 10-20 cm, average range 15 cm

Jointing: Regular; moderate to intensive

Grain: Strike 70°, Dip 82°S

Rift: Strike 168°, Dip 80°E

Potential Quarry Block Size: 30 cm x 1 m x 60 cm

Outcrop Exposure: Good

Use of Explosives: No

Mineralogy: Inhomogeneous stone with some quartz grains as large as 5 mm in a finer matrix

Deleterious Minerals: Pyrite

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 143.972 lbs/ft³, Absorption 4.675%, Compressive strength 16,894 lbs/in², Transverse strength n/a

Comments: The stone is a pleasing yellowish grey when fresh but, according to Parks (1914), oxidized to a yellowish brown after exposure to the weather. It would seem that quarry work took place in the stream gorge which is 20 m deep locally. Access is by a badly overgrown road to the shore on the eastern side of the brook. Further quarry development is unlikely due to the poor quality of the stone.

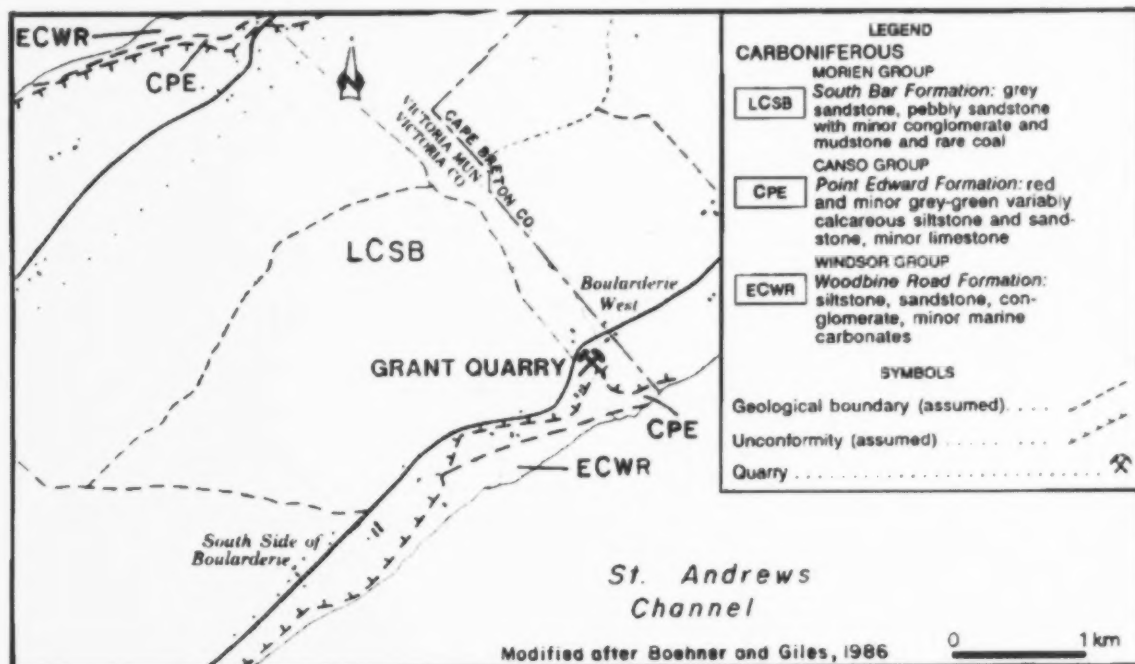


Figure 38. Geological location map for the Grant Quarry, Victoria County (11K/01).

Commercial Stone Name: SANDSTONE, OLIVE
County: CUMBERLAND
Property Name: FRED MEAD QUARRY, WALLACE BRIDGE

NTS: 11E/13
Longitude: 63°30'45"
Latitude: 45°48'06"
Sample Number: Not sampled
Date: November 2, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Ashlar, rubble stone

Jointing: Irregular; limited
Potential Quarry Block Size: 2 m x 1 m x 60 cm
Outcrop Exposure: Good
Use of Explosives: No

Mineralogy: Similar to the Wallace River Quarries, Cumberland County (p. 70)
Deleterious Minerals: Minor carbon fragments

Location Description: The Fred Mead Quarry is located on the southwestern bank of Meads Brook, 1.5 km south of the bridge at Wallace Bridge (Fig. 39). The Quarry is directly behind the barn of Mr. Fred Mead.

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Production History: The production history is unknown. The Quarry was noted by Fletcher (1905).

Comments: A large quarry was found down an embankment behind the Mead house. A large water filled hole, 50 m in diameter and 10 m deep, was apparently part of the old Quarry. In addition, a portion of the old Quarry was worked into the bank where a 5 m high face remains. A large quantity of good stone remains at this location and a diamond drilling program could define a large tonnage of stone.

Colour: Fresh olive and grey; variable
Grain Size: Medium; uniform
Fabric: No
Bedding: Strike 40-60°, Dip 23°NW; thickness range 30-60 cm, average range 49 cm

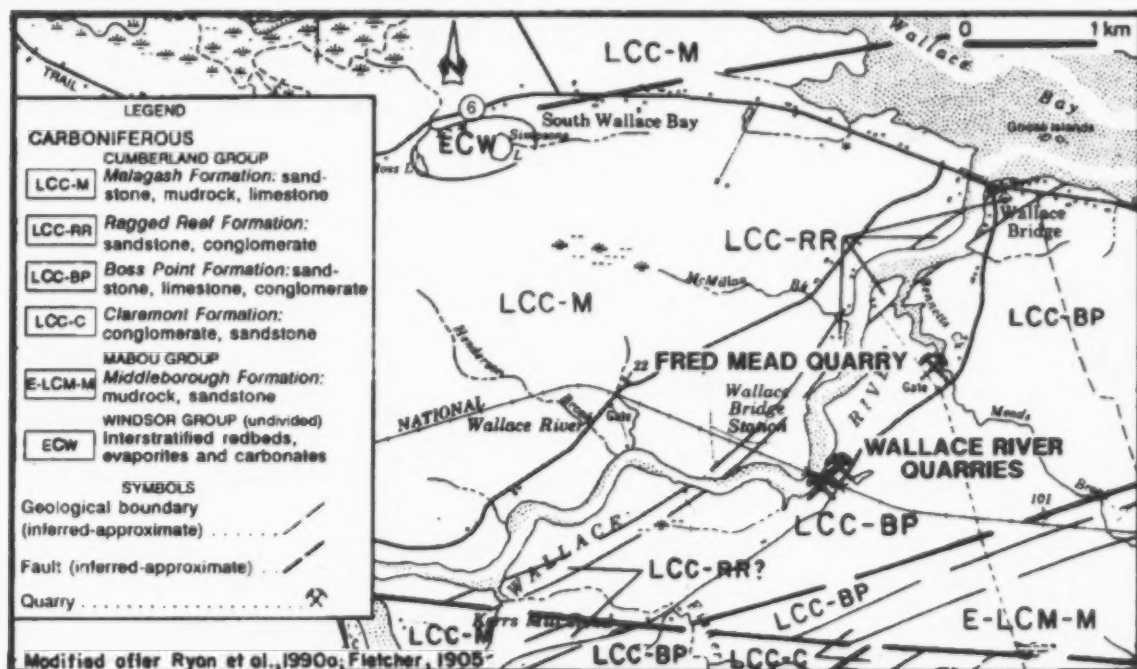


Figure 39. Geological location map for the Fred Mead and Wallace River Quarries, Cumberland County (11E/13).

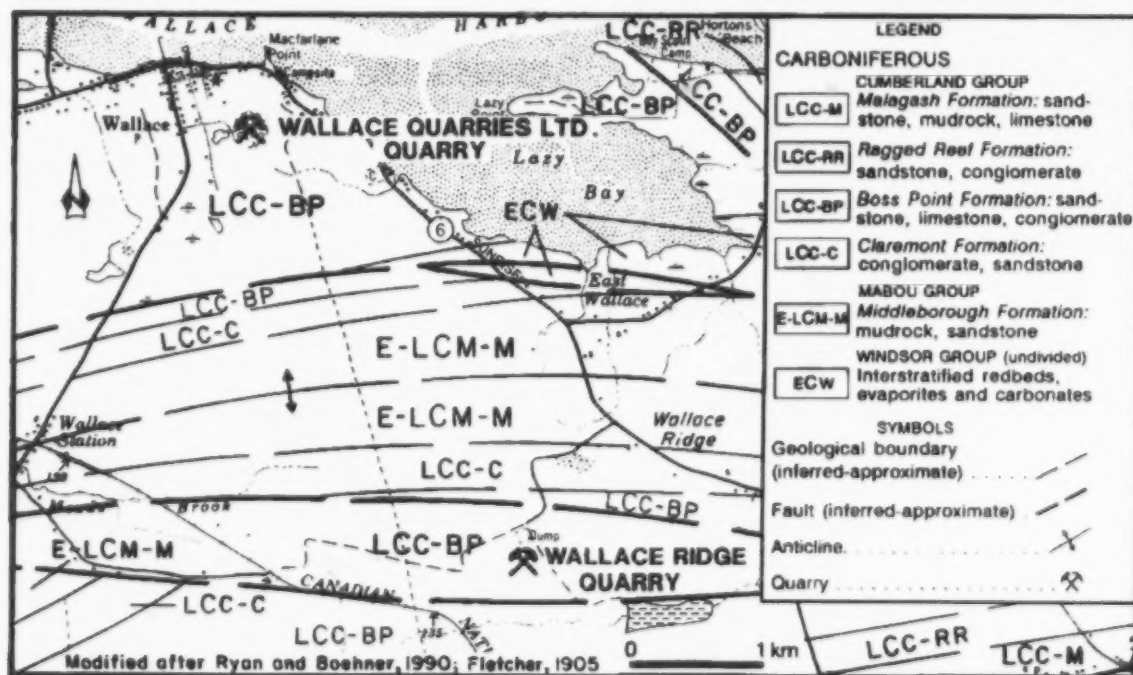
Commercial Stone Name: SANDSTONE, OLIVE**County:** CUMBERLAND**Property Name:** WALLACE RIDGE QUARRY, WALLACE RIDGE**NTS:** 11E/14**Longitude:** 63°25'23"**Latitude:** 45°46'54"**Sample Number:** 85-04-39 Box 1**Date:** September 20, 1985**Property Status:** Abandoned**Geological Rock Name:** Sandstone**Possible Uses:** Ashlar, rubble stone, fine carving**Rift:** Strike 72°, Dip 90°**Potential Quarry Block Size:** 1.2 m x 1.2 m x 3 m**Outcrop Exposure:** Good**Use of Explosives:** No**Mineralogy:** Similar to Wallace Quarries Ltd. Quarry (p. 77). Predominantly quartz grains in a fine matrix of silica.**Deleterious Minerals:** No**Diamond Drilling Details:** Not drilled**Physical Properties:** n/a**Location Description:** This is an occurrence taken from Fletcher's (1905) geological map. A small opening was found in the woods 250 m southeast of the municipal landfill site at Wallace Ridge (Fig. 40).**Production History:** No production has been recorded. Judging from the size of the opening I would think that the stone was used in the construction of basements for local buildings.**Colour:** Fresh olive buff; uniform**Grain Size:** Medium; uniform**Fabric:** No**Bedding:** Dip horizontal**Jointing:** Regular; limited**Grain:** Strike 158°, Dip 86°SW**Comments:** The Quarry was found about 100 m in the woods from an old clearing and apple orchards which were once a farm. The hole is 7 m in diameter and 3 m deep. Exposed is a massive, bedded sandstone jointed in such a way so as to facilitate the removal of blocks up to 1.2 m x 1.2 m x 3 m. Many dimension blocks were lying on the surface. Outcrop exposure is very limited, but bedrock in general is probably not far below the surface (within 50 cm). This area may contain a large reserve of sandstone. A diamond drilling program would determine overburden cover and volume of stone available.

Figure 40. Geological location map for the Wallace Ridge and Wallace Quarries Ltd. Quarries, Cumberland County (11E/14).

Commercial Stone Name: SANDSTONE, OLIVE
County: CUMBERLAND
Property Name: WALLACE RIVER QUARRIES
WALLACE BRIDGE

NTS: 11E/13

Longitude: 63°31'36"

Latitude: 45°47'37"

Sample Number: 85-02-45 Box 1

Date: November 2, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Ashlar, rubble stone

Location Description: Several quarries are located on the eastern side of the Wallace River on either side of the Canadian National Railway bridge over the Wallace River (Fig. 39, p. 68). The quarry just south of the bridge is the Battye Quarry. The quarries north of the bridge were connected to the main rail line by a short spur.

Production History: Stone for Government House built in Halifax in 1800 was quarried from the Battye Quarry. The Quarries were located by Fletcher (1905). According to Parks (1914) "... it is 40 years since any work was done" at the Battye Quarry.

Colour: Fresh olive to buff; weathered olive; uniform

Grain Size: Medium; uniform

Fabric: No

Bedding: Strike 85°, Dip 23°N; thickness range 20-30 cm, average range 25 cm

Grain: Strike 85°, Dip vertical

Rift: Strike 175°, Dip vertical

Potential Quarry Block Size: 1 m x 2 m x 1 m

Outcrop Exposure: Fair to good

Use of Explosives: Unknown

Mineralogy: According to Parks (1914) "uniformly sized quartz grains with a minimum of cement make up the rock."

Deleterious Minerals: Organic particles

Other Features: The stone south of the bridge contains abundant organic fragments and is variable in colour. Stone north of the bridge is massive with no organics.

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 139.84 lbs/ft³, Absorption 7.32%, Compressive strength 11,775 lbs/in², Transverse strength 1,401 lbs/in²

Comments: Southern quarry: A small creek has cut a steep ravine into the sandstone exposed on the River bank. According to Parks (1914) the best stone was obtained from the northern side of the ravine. The beds are mainly less than 20 cm in thickness although blocks up to 2-3 t remain as waste.

Northern quarries: Immediately north of the railway bridge, the remains of wharf pilings and a large amount of sandstone blocks on a waste pile were found. The old Wallace River Quarries were found 350 m further north. At least 6 old quarries were found running east from the Wallace River along strike toward the Wallace Bridge to Middleboro road. About 75 m of rails were found in the eastern end of the quarries. The quarries consist of a series of pits averaging 30 m in diameter and 5-7 m deep. Large blocks of stone on waste piles indicate very good stone was removed from the quarries. The stone is massive with little or no organic content. The local people indicated that a brick plant produced bricks from the clay overburden for a number of years while the stone quarries were working. The area has some potential for additional quarry development although the overburden thickness increases to over 10 m to the east. A diamond drilling program would be required to prove additional reserves of building stone.

Commercial Stone Name: SANDSTONE, OLIVE**County:** PICTOU**Property Name:** EAGLE QUARRY, TRENTON**NTS:** 11E/10**Longitude:** 62°37'09"**Latitude:** 45°37'56"**Sample Number:** Not sampled**Date:** September 21, 1985**Property Status:** Abandoned**Geological Rock Name:** Sandstone**Possible Uses:** Rubble stone, rock fill**Texture:** Variable**Fabric:** No**Bedding:** Strike 74°, Dip 10°NW; thickness range 8-10 cm, average range 8 cm**Jointing:** Irregular**Potential Quarry Block Size:** 20 cm x 50 cm x 1 m**Outcrop Exposure:** Fair to good**Use of Explosives:** Black powder**Deleterious Minerals:** No**Diamond Drilling Details:** Not drilled**Physical Properties:** n/a

Location Description: The old Quarry is located on the Little Egypt Road which joins Little Harbour and Hillside. It is on the southern side of the road near where the power line crosses the road, 900 m east of Route 348 at Hillside (Fig. 41).

Production History: No production has been recorded. The Quarry was located on Fletcher's (1902a) geological map.

Colour: Fresh olive yellow; weathered yellow; variable

Grain Size: Coarse; variable

Comments: The upper part of the old Eagle Quarry has been used as a gravel pit. The old Quarry floor is 5-7 m below the present pit floor. The stone is crumbly and weathers to a yellow colour. Plug and feather holes were present and it appears as though some dimension stone was quarried in the past. There is no evidence of recent quarrying at this location for at least 70 years.



Figure 41. Geological location map for the Eagle Quarry, Pictou County (11E/10).

Commercial Stone Name: SANDSTONE, OLIVE
County: PICTOU
Property Name: ELLIOTTS QUARRY,
SIX MILE BROOK

NTS: 11E/10
Longitude: 62°52'45"
Latitude: 45°34'09"
Sample Number: Not sampled
Date: October 10, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Rubble stone

Location Description: The Elliotts Quarry is located on the western side of the road connecting Salt Springs and Six Mile Brook, 350 m north of the point where Six Mile Brook crosses this road (Fig. 28, p. 54). The Quarry is on the eastern bank of the Brook, 8 m below the level of the road.

Production History: Production history is unknown. The Quarry is located on Fletcher's (1902c) geological map.

Colour: Fresh olive grey; uniform
Grain Size: Fine; uniform
Fabric: No

Bedding: Strike 0°, Dip 7°E; thickness range 8-10 cm, average range 8 cm
Jointing: Irregular; moderate
Potential Quarry Block Size: 1 m x 50 cm x 20 cm
Outcrop Exposure: Good
Use of Explosives: No

Deleterious Minerals: No

Other Features: Stone exposed is thinly bedded although thicker beds may be present at depth because blocks up to 25 cm thick are present on the waste pile.

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: The old Elliotts Quarry is 30 m east of the present position of Six Mile Brook with a working face about 5 m high. The stone is similar in grain size and texture to the MacPherson Quarry, Pictou County (p. 74), stone although with a green cast. Further development of this site would be difficult because of the proximity to the road.

Commercial Stone Name: SANDSTONE, OLIVE
County: PICTOU
Property Name: HUGGANS BROOK QUARRY,
BROWNSVILLE

NTS: 11E/09
Longitude: 62°22'51"
Latitude: 45°37'59"
Sample Number: 85-06-42 Box 1
Date: October 23, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Rough rubble stone

Grain Size: Medium; variable
Fabric: No
Bedding: Strike 50°, Dip 10°NW
Jointing: Irregular; moderate
Outcrop Exposure: Good
Use of Explosives: No

Deleterious Minerals: No

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Location Description: The Huggans Quarry is located on the eastern side of Huggans Brook at a sharp, westerly bend, 1.75 km south-southeast of the church at Brownsville (Fig. 27, P. 52).

Production History: The production history is unknown. The Quarry location was taken from Fletcher's (1902a) geological map.

Colour: Fresh olive grey; weathered grey; uniform

Comments: The old Quarry was simply a hole in the Huggans Brook bank about 5 m above the level of the Brook. Bedding plane partings are 8-10 cm in the upper layers and 10-15 cm in the lower layers. The stone is badly broken and because no plug and feather holes were found it can be assumed that the stone was used for rough rubble stone.

Commercial Stone Name: SANDSTONE, OLIVE
County: PICTOU
Property Name: MACPHERSON QUARRY,
EIGHT MILE BROOK

NTS: 11E/10

Longitude: 62°52'55"

Latitude: 45°33'21"

Sample Number: 85-02-16 Box 1

Date: September 21, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Monuments, ashlar, rubble stone, fine carving

Location Description: The MacPherson Quarry is located on the northern bank of Eight Mile Brook (Fletcher, 1902c), 400 m upstream from its confluence with Six Mile Brook. It is 200 m upstream from where Eight Mile Brook crosses the road from Salt Springs to Six Mile Brook (Fig. 28, P. 54).

Production History: The Quarry was in operation in the late 1800s to early 1900s. The stone was used by a monument maker, Mr. J. MacPherson of New Glasgow (Parks, 1914). Monuments made of this stone can be found throughout the cemeteries of New Glasgow, Stellarton and Mount Thom.

Colour: Fresh grey and olive; weathered grey; uniform, variable

Grain Size: Fine; uniform

Fabric: No

Bedding: Strike 5°, Dip 12°E, thickness range 5-40 cm, average range 10 cm

Jointing: Irregular; moderate

Potential Quarry Block Size: 1 m x 2 m x 50 cm

Outcrop Exposure: Poor to fair

Use of Explosives: No

Mineralogy: Very hard, fine grained, composed of quartz and feldspar grains in a matrix composed of silica, calcium carbonate and clay.

Deleterious Minerals: No

Other Features: The grey stone is overlain by up to 10 m of overburden and mudstone. Outcrop exposure of the grey stone is very limited because the old Quarry is at the level of the Brook and water filled.

Diamond Drilling Details: A drilling program (Dickie, 1988) consisting of 7 holes totalling 244 m was carried out in 1986 by the Nova Scotia Department of Mines and Energy (EMB-86-01 to EMB-86-07; Figs. 42 and 43; Appendix 1, P. 102). The program was designed to locate the grey sandstone horizon on the northern bank of Eight Mile Brook on the level of the road to Stillman. Holes EMB-86-03, EMB-86-04 and EMB-86-05 intersected the grey sandstone at 5.2 m, 6.4 m and 11 m, respectively. The grey stone varies in thickness from 6.4-14.3 m and is overlain by 4.6-5.2 m of overburden and minor amounts of brown sandstone. Hole EMB-86-07 intersected 4.5 m of grey sandstone to the northeast along strike. A deposit of 25 800 m³ of high quality grey sandstone is available in this deposit.

Physical Properties: n/a

Comments: Two openings were found along the northern side of Eight Mile Brook. Both were water filled so it was impossible to determine their depth. The top of the grey quarried unit is at the level of the Brook, a fact which was confirmed by the drilling. The grey sandstone is one of the best stones for the production of sandstone monuments in the Province. It is extremely fine grained, dense and capable of being worked in fine detail. Several monuments in the Stillman Cemetery made in the early 1900s have retained sharp lines although they have weathered brown in colour. Although the deposit is constrained between the road and the Brook and is overlain by 5 m of overburden, it may have further development potential because of its high quality.

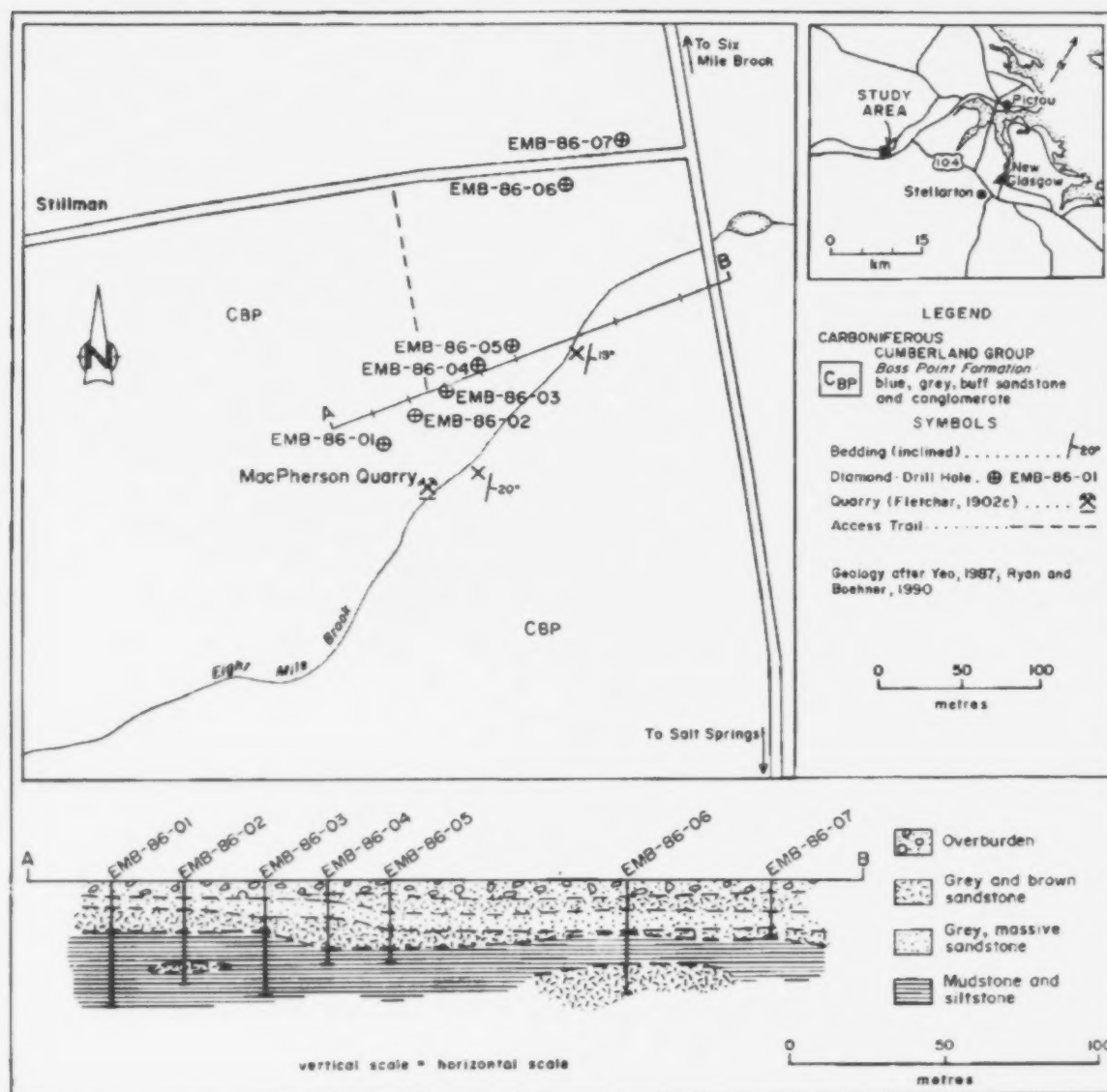


Figure 42. MacPherson Quarry, Eight Mile Brook, Pictou County, diamond-drill hole location map and section A-B (EMB-86-01 to EMB-86-07) (11E/10).

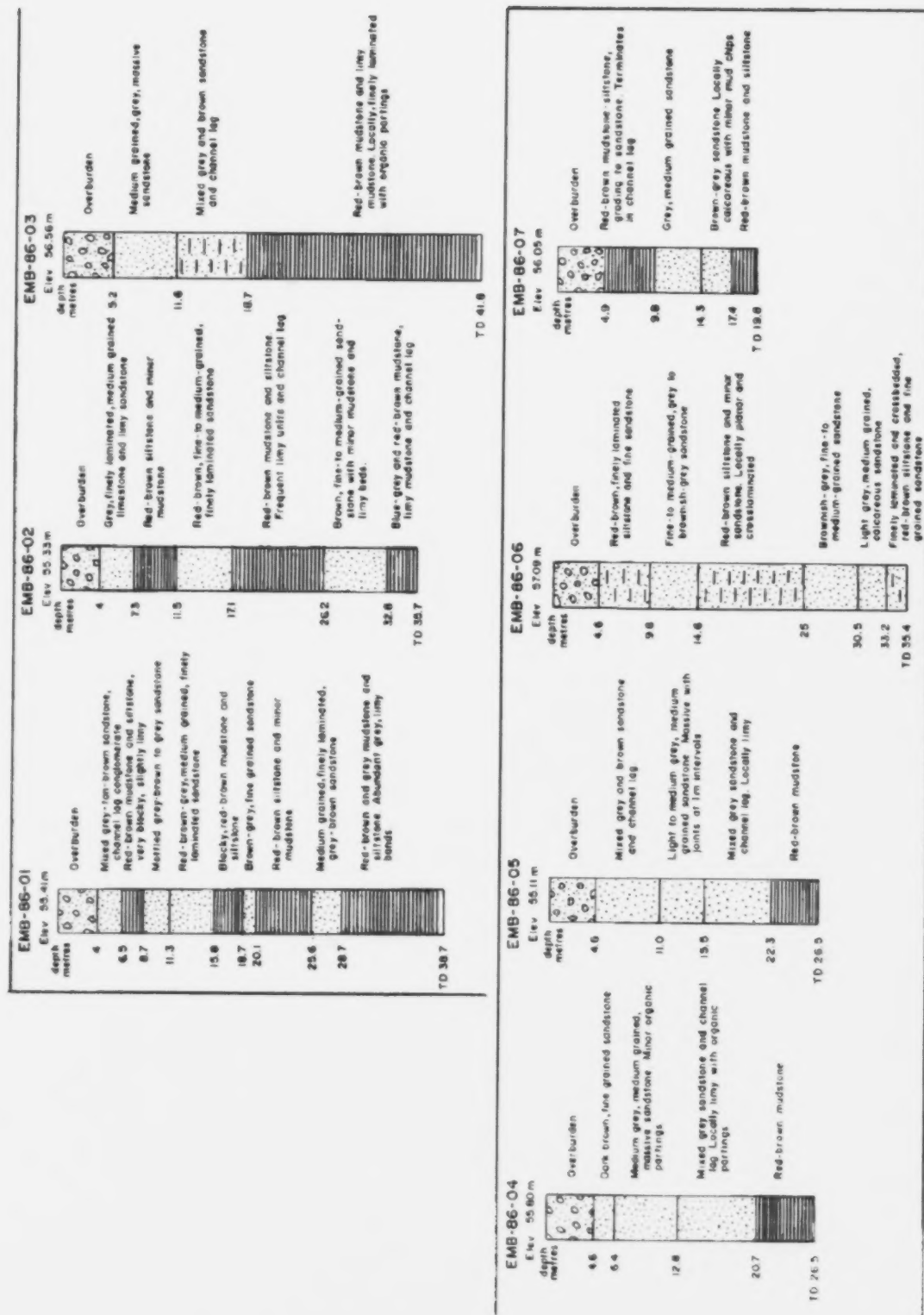


Figure 43. MacPherson Quarry, Eight Mile Brook, Pictou County, diamond-drill hole columns (EMB-86-01 to EMB-86-07) (11E/10).

**Commercial Stone Name: SANDSTONE, OLIVE AND GREY
(WALLACE OLIVE, WALLACE BLUE)**

County: CUMBERLAND

Property Name: WALLACE QUARRIES LTD. QUARRY, WALLACE

NTS: 11E/14

Longitude: 63°27'40"

Latitude: 45°48'33"

Sample Number: Wal-86-01 Box 1; Samples 4 and 5, NSDME Sample Catalogue 89-01

Date: October 1985

Property Status: Active

Geological Rock Name: Sandstone

Possible Uses: Ashlar, cladding panels, tiles, armour stone

Location Description: The Quarry is located 750 m southeast of the intersection of Route 6 and the road to Wallace Station from Wallace in the Village of Wallace (Fig. 40, p. 69). It is accessible via a gravel road near the truck garage owned by Stanley Flynn. Mr. Flynn is the Quarry manager.

Production History: Building stone production began in the early 1870s from this Quarry. The presence of the stone was discovered by a farmer digging post holes. According to Parks (1914) the Quarry was started by William McNab. During the next 50 years the Quarry changed hands several times. At present the Quarry is owned by Wallace Quarries Ltd. and managed by S. Flynn. In the period 1873-1973 the total production of the Wallace Quarry was 841 000 t (Nova Scotia Department of Mines, 1874-1974). This is 90% of the total stone production for the entire Province of Nova Scotia.

Colour: Fresh olive and blue grey; weathered olive to buff and grey; uniform to variable

Grain Size: Medium; uniform

Fabric: No

Bedding: Strike 80°, Dip 10°N; thickness range 10 cm-2 m, average range 1 m

Jointing: Regular

Grain: Strike 90°, Dip vertical; spacing 3-6 m

Rift: Strike 170°, Dip 80°W; spacing 1-4 m

Potential Quarry Block Size: 2 m x 2 m x 2 m

Outcrop Exposure: Good; up to 6 m of overburden on the Quarry's eastern side

Use of Explosives: Black powder

Mineralogy: According to Parks (1914) "the stone is seen to be made up of fairly uniform quartz grains of

about 0.25 mm in diameter, and feldspars of about the same size in far less abundance. The grains are rather rounded in outline, and are fitted closely together with only a small amount of greenish-yellow cement of an argillaceous character. Although the feldspars show decomposition, there is, on the whole, very little indeterminable material, as little is to be seen except quartz, feldspars and cement. The greater relative amount of quartz and the absence of 'dirty matter' should render this stone more durable than most of the New Brunswick sandstones of the olive-green class."

Deleterious Minerals: Locally organic fragments and partings and minor pyrite.

Other Features: Geologically Wallace Quarries Ltd. Quarry is located in thick sequences of channel sands with thin interbedded overbank shale deposits. This coupled with a regularly defined joint pattern results in the extraction of blocks weighing up to 8 t.

Diamond Drilling Details: A diamond drilling program (Dickie, 1991), by the Nova Scotia Department of Mines and Energy in 1986, consisting of 8 holes totalling 387 m on the eastern side of the Quarry, has located additional reserves of sandstone (WAL-86-01 to WAL-86-08; Figs. 44a, 44b and 45; Appendix 1, p. 139). Between 5.8 m and 8.2 m of massive, fine- to medium-grained, olive sandstone were intersected in holes WAL-86-04 and WAL-86-05 beneath 11.6 m of overburden, sandstone and shale. Two units of blue-grey sandstone were intersected below the olive sandstone and a thin shale unit. Approximately 10 000 m³ of green sandstone and 32 800 m³ of blue-grey sandstone were outlined by core drilling with the resource open to the north and east.

Physical Properties: (Parks, 1914): Specific weight 144.808 lbs/ft³, Absorption 5.902%, Compressive strength 13,681 lbs/in², Transverse strength 1.838 lbs/in²

Comments: The Quarry is 200 m wide and just over 15 m deep. It is circular in shape with active faces on the eastern side and on the 2nd bench in the centre of the Quarry. The system of quarrying has not

changed greatly since Messervey (1926), although a large wheeled front end loader is now used to lift stone (eliminating the derricks) and for overburden removal. Once overburden has been removed, stone is quarried by drilling vertical holes to a depth of about 3 m or the height of the bed. They are placed at distances varying from 1-2 m. The hole is tamped with waste up from the bottom one-third of the length. The middle third of the hole is left as air space, except for a small charge of black powder which is inserted in this part of the hole. The upper third of the hole is then tamped. In this way the cleavage can be

controlled both in direction and evenness of surface with remarkable accuracy. The stone is sold in rough block form only. There is no longer any sawing facility at the Quarry.

Significant quantities of sandstone are required for the restoration industry which is rapidly expanding in North America. Given the volume of reserves of good sandstone which remain in the Wallace Quarries Ltd. Quarry, this sandstone will continue to be quarried and used for building stone for many years in the future. Three colours of stone were produced from this

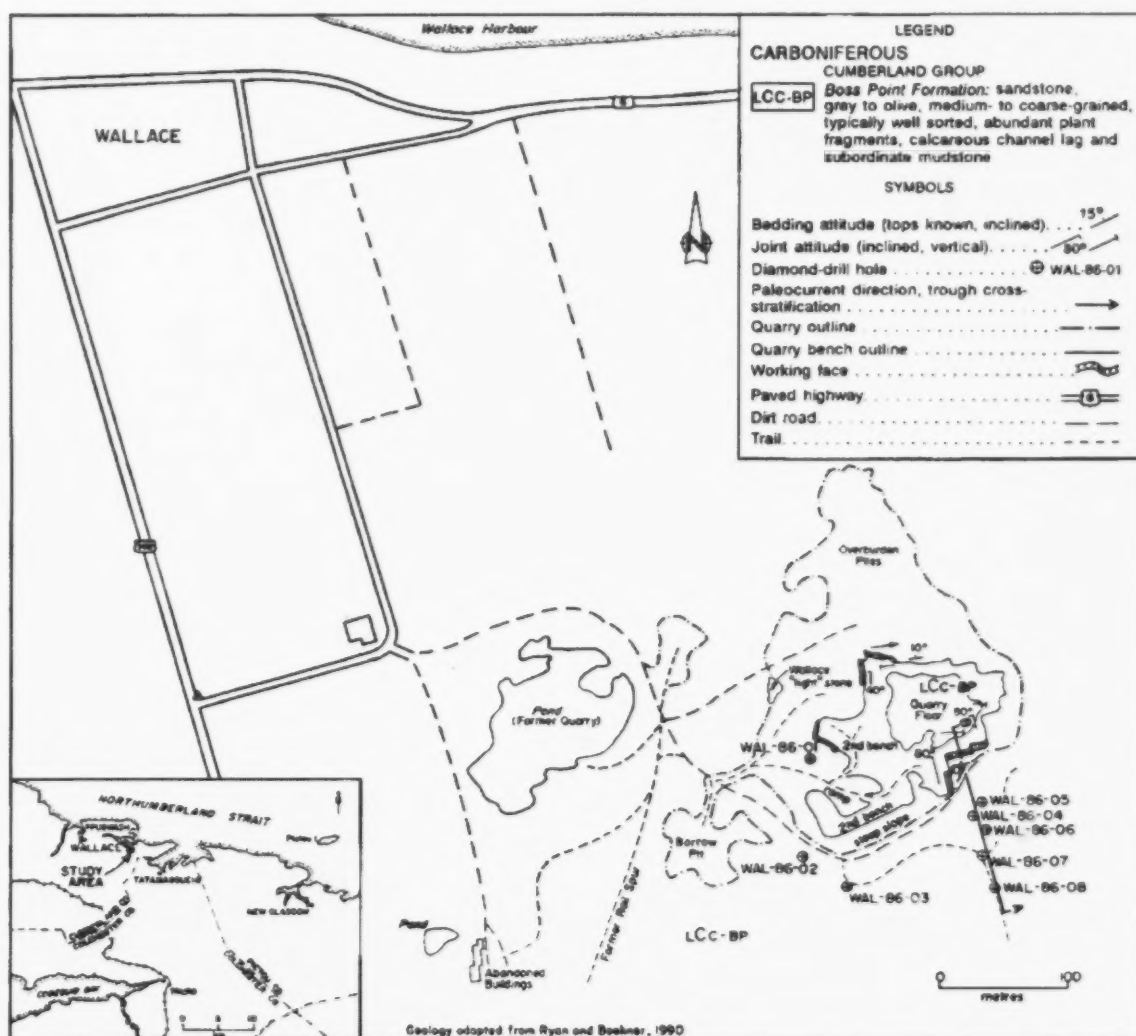


Figure 44a. Wallace Quarries Ltd. Quarry, Cumberland County, diamond-drill hole locations (WAL-86-01 to WAL-86-08) (11E/14).

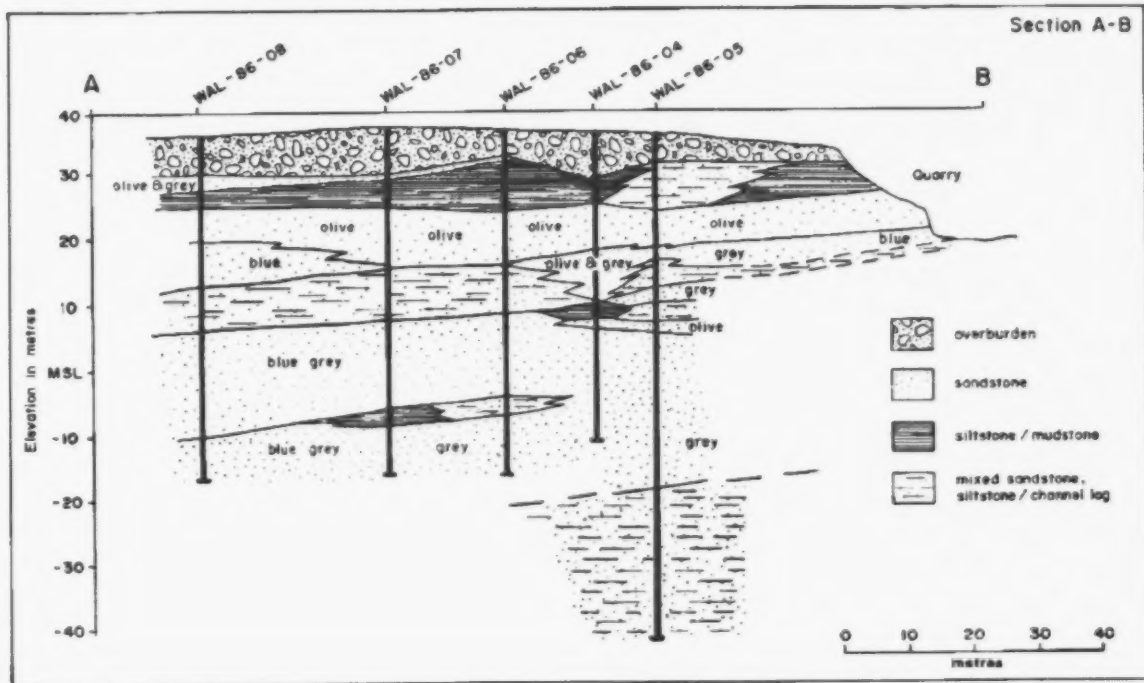


Figure 44b. Wallace Quarries Ltd. Quarry, Cumberland County, diamond-drill hole section A-B.

Quarry in the past, olive, blue and light grey stone. Present production is limited to primarily olive stone and some blue.

Stone from this Quarry has been used in many public buildings in Canada (Parks, 1914) including parts of the Centre Block of the Parliament Building, Ottawa; Dominion Public Building (former Halifax Post Office), Halifax; Provincial Building, Halifax; Dominion Public Building, Amherst; Confederation

Centre, Charlottetown; and perhaps hundreds more. Shiploads were sent to markets in Boston, New York and as far west as California. Great numbers of buildings erected in the 1920s and 1930s in Montreal used Wallace sandstone. The recent rise in interest in using natural stone for building exteriors has resulted in increased production at Wallace. Sandstone can be cut into large 10 cm thick panels and used as exterior cladding.

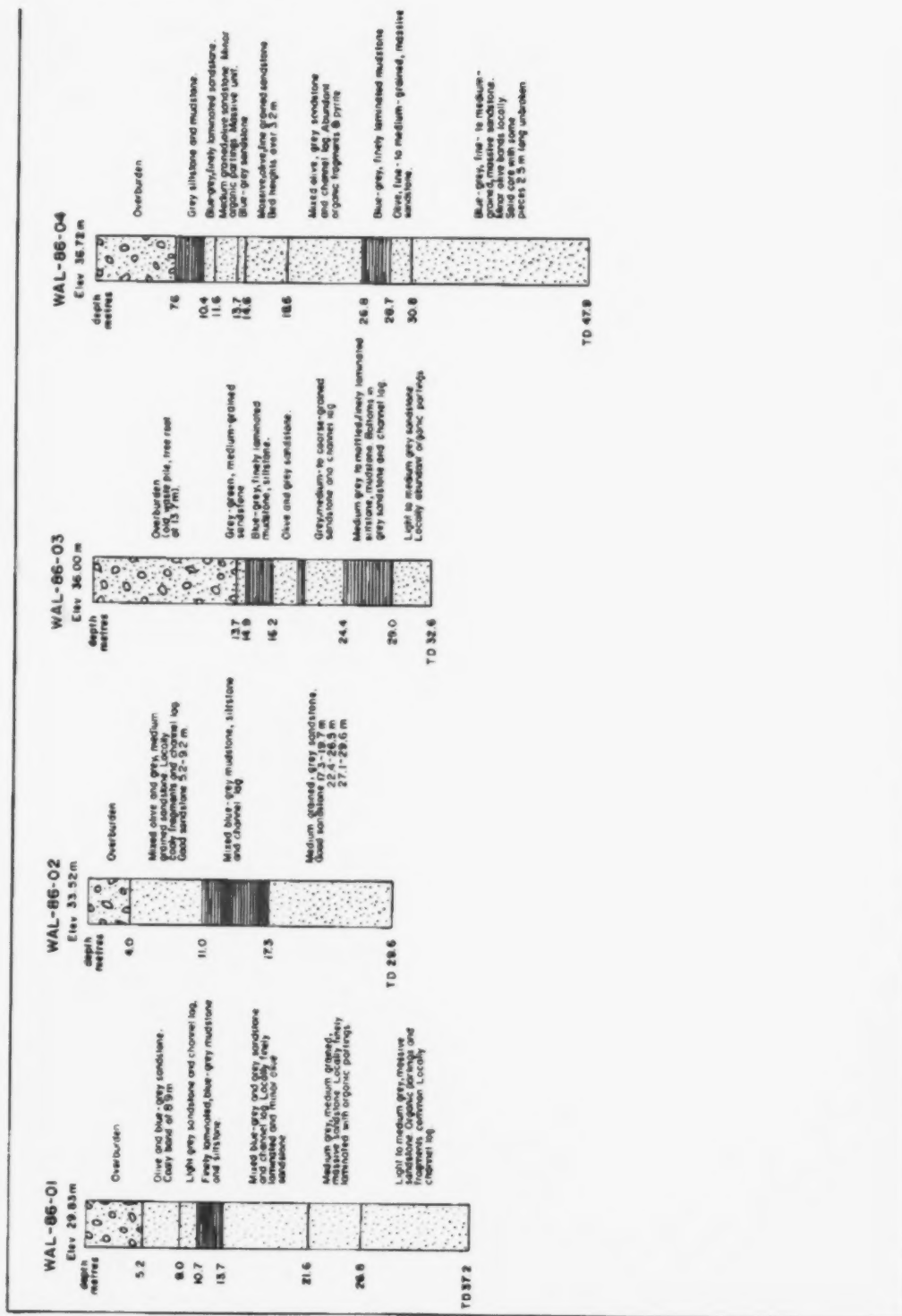


Figure 45. Wallace Quarries Ltd. Quarry, Cumberland County, diamond-drill hole columns (WAL-86-01 to WAL-86-08) (11E/14).

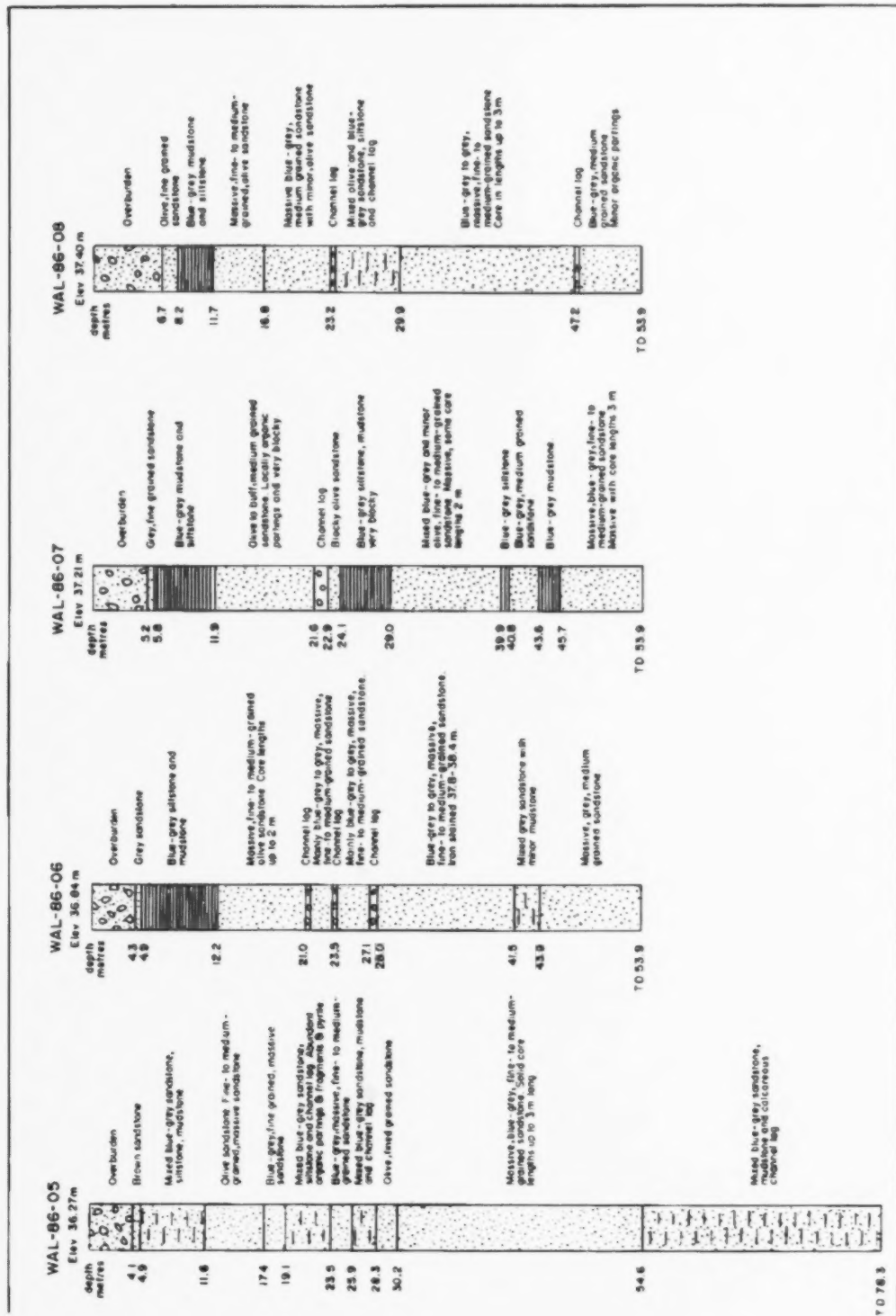


Figure 45. Continued.

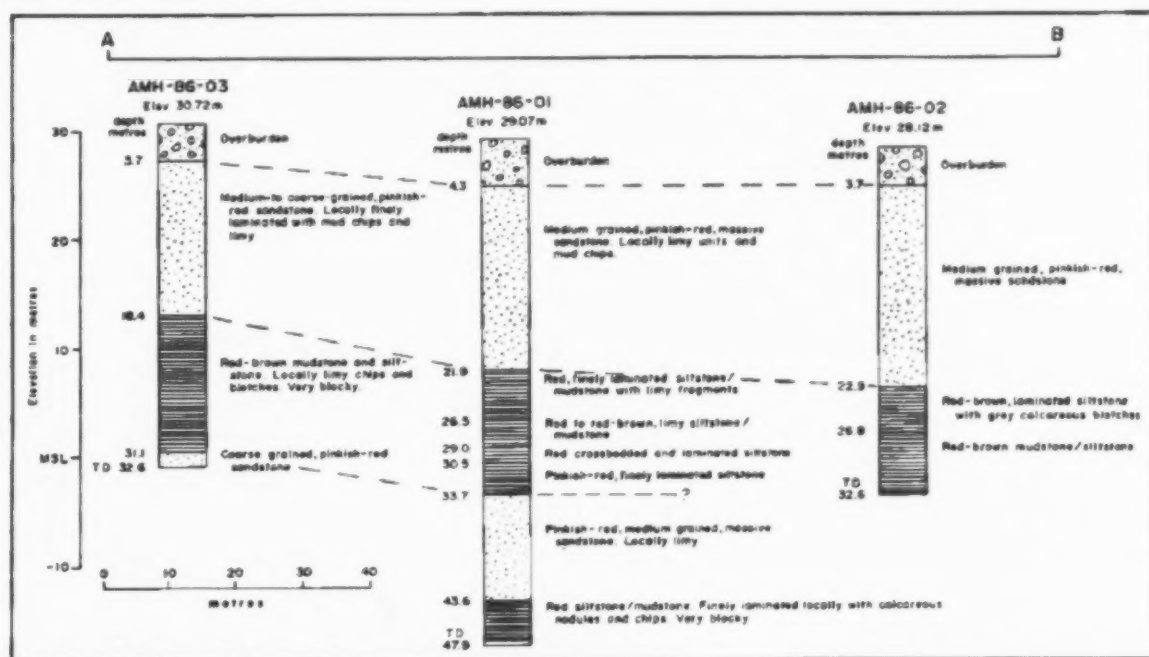
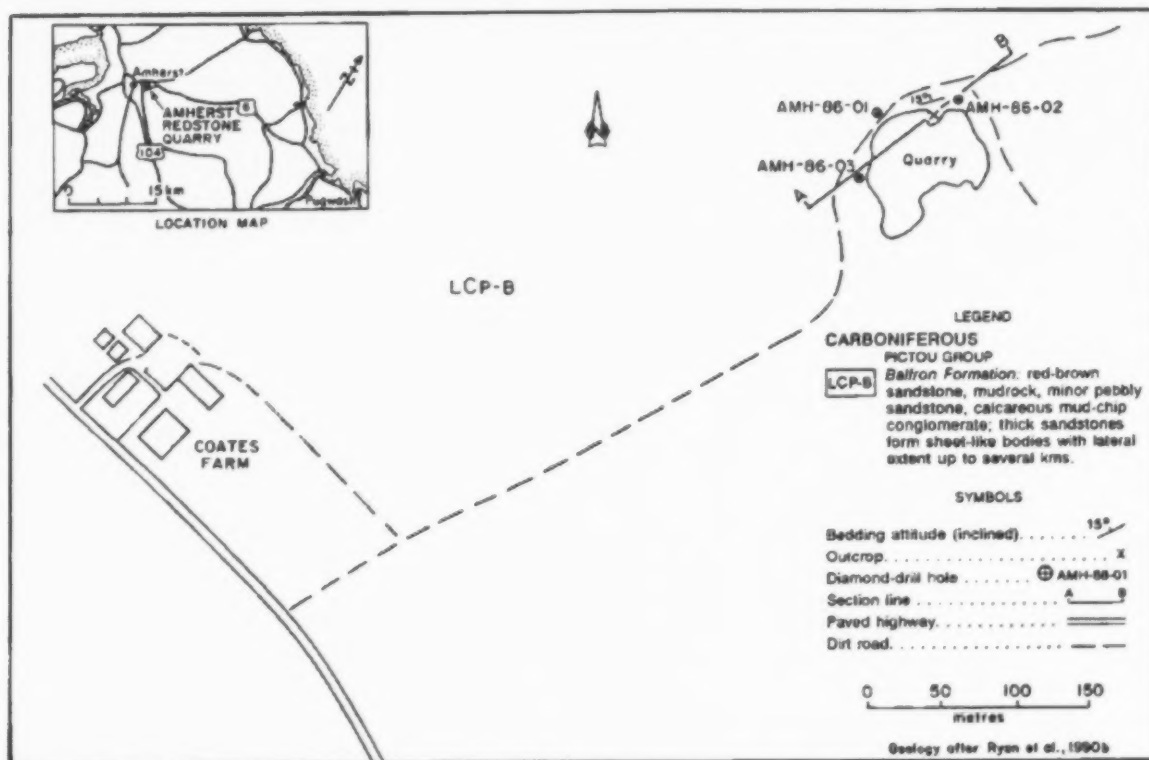


Figure 47. Amherst Redstone Quarry, Cumberland County, diamond-drill hole locations, columns and section A-B (AMH-86-01 to AMH-86-03) (21H/16).

Diamond Drilling Details: Three drillholes were collared on the western side of the Quarry, totalling 113 m (AMH-86-01 to AMH-86-03; Fig. 47; Appendix 1, p. 97). All holes intersected 15-20 m of red, fine- to medium-grained, massive sandstone of the Pictou Group. The stone was overlain by 3.7-4.3 m of overburden and underlain by 11.8-12.7 m of red siltstone and mudstone. This drilling has outlined 70 000 t of sandstone and the resource is open in all directions.

Physical Properties: (Parks, 1914): Specific weight 142.93 lbs/ft³, Absorption 6.894%, Compressive strength 11,122 lbs/in², Transverse strength 551 lbs/in²

Comments: Parks (1914) described the Quarry as it was in 1911. He stated, "The property consists of 20 acres situated about a mile to the east of the town. The quarry is at present about 250 feet wide by 100 feet long. The 250 feet represents the actual working face, but the 100 feet is merely the forward end of an excavation of 400 feet, the rest of which has been partially filled with debris. The present face shows 55 feet of stone covered by an average of 15 feet of soil. The main joints strike east and west with a vertical dip. They are well defined at intervals of 20, 20, 20,

40, and 20 feet from north to south. The second series of joints, at right angles to the above, is irregular and ill-defined. The formation strikes east and west with the main joints, and dips northward at from 10° to 20°. The bedding is variable and much of the upper stone is thin and unsuitable for scabbled blocks. The lower stone is thicker and may occasionally be obtained in blocks 4 feet thick, but the average of the heavy stone is not over 2 feet. An irregular bed of shale appears at a depth of 20 feet in the east end of the face, but good stone is encountered beneath it. Of the total face of 55 feet, probably 35 feet would yield building stone of good sizes. The remaining 20 feet is practically all suitable for rubble."

The Quarry is inside the Amherst Town limits and is surrounded by farm land and housing subdivisions. The stone raised from this Quarry was used to construct the Armouries, Halifax, Scotia Bank, Truro, Scotia Bank, Amherst, Town Hall, Amherst, and many others. Large quantities of excellent stone remain and steps are needed to ensure that the resource is not lost due to further encroachment of housing developments. This represents one of the best sandstone development opportunities in Nova Scotia.

Commercial Stone Name: SANDSTONE, RED
County: CUMBERLAND
Property Name: COLDSPRING HEAD QUARRY, NORTHPORT

NTS: 11E/13

Longitude: 63°51'52"

Latitude: 45°57'45"

Sample Number: Not sampled

Date: September 9, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Rubble stone

Jointing: Irregular

Potential Quarry Block Size: 1 m x 1 m x 50 cm

Outcrop Exposure: Good

Use of Explosives: No

Mineralogy: Quartz, feldspar and muscovite mica grains in clay cement. Stone is open grained and soft.

Deleterious Minerals: Muscovite mica

Location Description: The Coldspring Head Quarry is located on the shore at Coldspring Head on a property owned by a Mr. Bowser (Fig. 48). The shoreline is presently taken up by many summer cottages.

Production History: Parks (1914) mentioned an Oakley Myers Quarry at Northport producing stone which was shipped to Pugwash by skows. This may be the site of the quarry he talked about.

Colour: Fresh red brown; weathered red; uniform

Grain Size: Medium; uniform

Fabric: No

Bedding: Thickness range 10-60 cm, average range 30 cm

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: Stone was quarried from cliffs 7 m high on the shore of the Northumberland Strait. A continuous exposure of red-brown sandstone extends for 200 m along the shoreline. Bedding is massive with some units up to 60 cm thick. According to Parks (1914) the stone was used in the Royal Bank, Sydney, and the new customs house in Halifax. The Customs House was in a serious state of deterioration and was demolished about 30 years ago. There is little hope of any further development of this site because of cottage development.

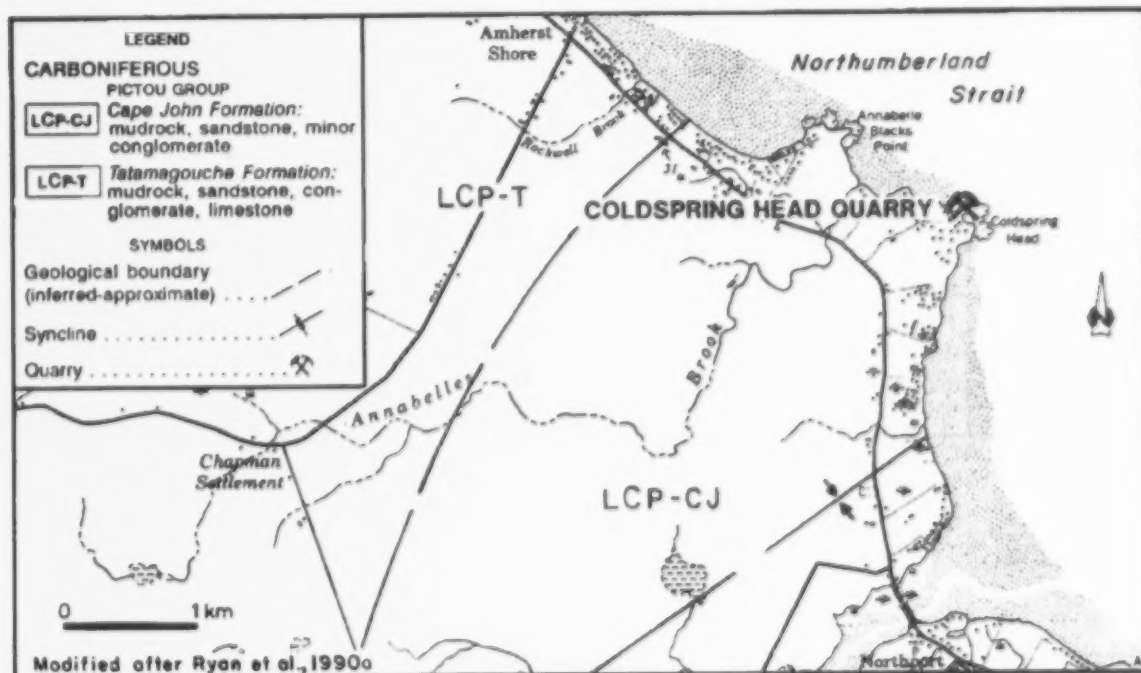


Figure 48. Geological location map for the Coldspring Head Quarry, Cumberland County (11E/13).

Commercial Stone Name: SANDSTONE, RED**County:** PICTOU**Property Name:** HINES. QUARRY, RIVER JOHN**NTS:** 11E/11**Longitude:** 63°01'40"**Latitude:** 45°44'40"**Sample Number:** Not sampled**Date:** September 9, 1985**Property Status:** Abandoned**Geological Rock Name:** Sandstone**Possible Uses:** Rubble stone

Location Description: The old Hines Quarry is located on the eastern bank of River John, 300 m downstream from the railway bridge near Welsford (Fletcher, 1903; Fig. 49).

Production History: According to Parks (1914) two quarries were still operating adjacent to each other at this location in 1911. The H. McNab Quarry was producing stone for shipment to Toronto. The L. and W. Gammon Quarry also shipped stone to Toronto. Both quarries have been abandoned for 75 years.

Colour: Fresh red, brown, buff, grey; variable**Grain Size:** Fine; uniform**Fabric:** No**Bedding:** Strike 75°, Dip 15°NW; thickness range 2-10 mm, average range 5 mm**Jointing:** Irregular; moderate**Potential Quarry Block Size:** 1 m x 1 m x 30 cm**Outcrop Exposure:** Fair**Use of Explosives:** No

Mineralogy: According to Parks (1914), "the grain is exceedingly fine as many as sixteen grains occurring in the space of 1 mm. The grains are mainly quartz with a sprinkling of feldspar grains. The cement is relatively abundant and of bright red colour; it consists of clay and oricles of iron."

Deleterious Minerals: No

Other Features: Between 7 m and 12 m of soil, broken rock and shale overlie beds of stone of maximum 40 cm thickness.

Diamond Drilling Details: Not drilled

Physical Properties: (Parks, 1914): Specific weight 146.041 lbs/ft³, Absorption 5.54%, Compressive strength 15,147 lbs/in², Transverse strength 1,490 lbs/in²

Comments: At the time of Parks' visit in 1911 the Quarry operators found it very costly and difficult to produce a uniform stone for sale. All production was shipped by rail to Toronto for use as coarsing stone (Parks, 1914). The bridge piers and towers of the nearby railway bridge were constructed of stone from these Quarries. The highly variable colours of the stone and their finely laminated nature are apparent in this structure. There is no potential for any development of this location due to poor quality, inconsistent stone and very thick overburden.

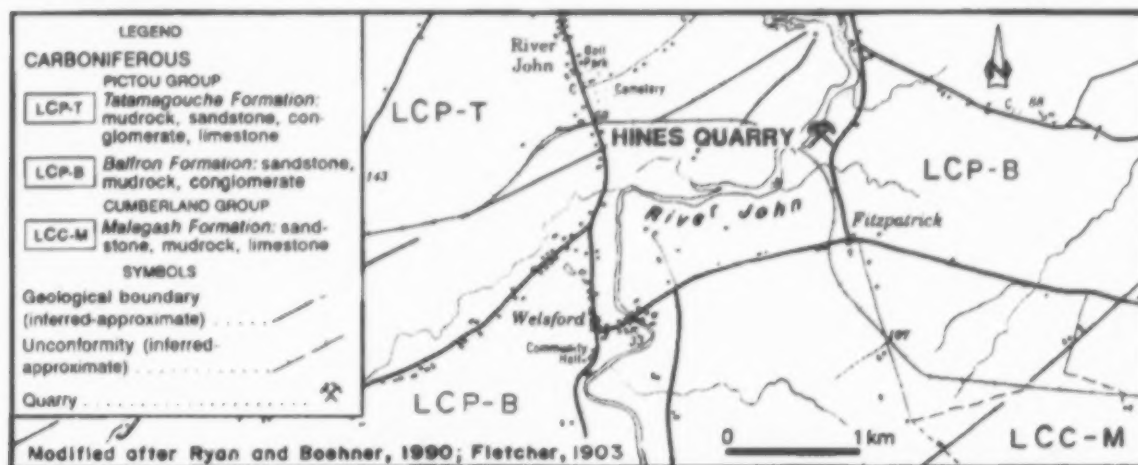


Figure 49. Geological location map for the Hines Quarry, Pictou County (11E/11).

Commercial Stone Name: SANDSTONE, RED
County: PICTOU
Property Name: WEST BRANCH FRENCH RIVER
QUARRY 1, MERIGOMISH

NTS: 11E/09
Longitude: 62°25'29"
Latitude: 45°37'13"
Sample Number: Not sampled
Date: October 24, 1985
Property Status: Abandoned
Geological Rock Name: Sandstone
Possible Uses: Rubble stone

Location Description: The Quarry is located on the West Branch French River exactly 1.17 km southeast of the point where the Canadian National Railway bridge crosses the French River (Fig. 27, P. 52). It is located on the western bank 300 m upstream from the confluence of the East and West Branch French Rivers.

Production History: No production has been recorded. The location was taken from Fletcher's (1902a) geological map.

Colour: Fresh red; weathered red brown; uniform
Grain Size: Fine; variable
Fabric: No

Bedding: Strike 146°, Dip 25°NW; thickness range 1-5 mm, average range 2 mm
Jointing: Regular; moderate
Grain: Strike 146°, Dip 25°NW; spacing 50 cm
Rift: Strike 60°, Dip 65°SW; spacing 1 m
Hardway: Strike 150°, Dip vertical; spacing 1 m
Potential Quarry Block Size: 1 m x 1 m x 50 cm
Outcrop Exposure: Good
Use of Explosives: No

Deleterious Minerals: No

Other Features: Sandstone is underlain and overlain by red mudstone which seriously limits the volume of sandstone available for quarrying.

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: No actual quarry was found although a 1 m thick bed of red sandstone was exposed in the West Branch French River bank. The stone is regularly jointed producing 1 m square blocks as the River bank sloughs off.

Commercial Stone Name: SANDSTONE, RED AND WHITE
County: INVERNESS
Property Name: GRAHAM RIVER QUARRY

NTS: 11F/14

Longitude: 61°26'58"

Latitude: 45°52'02"

Sample Number: 85-05-10 Box 1

Date: September 20, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Rubble stone, ashlar

Location Description: The Graham River Quarry is located on the southern bank of Graham River 700 m south of Rear Judique Chapel (Fig. 50). The Quarry is on land owned by Angus MacMillan of Judique and is 400 m north of the MacMillan homestead.

Production History: Small amounts of stone were quarried for local buildings in the Judique area mainly as basement course.

Colour: Fresh red and buff; variable

Grain Size: Medium; uniform

Fabric: No

Bedding: Strike 45-50°, Dip vertical; thickness range 5 mm-2 m

Jointing: Irregular; moderate

Potential Quarry Block Size: 1 m x 2 m x 50 cm

Outcrop Exposure: Good

Use of Explosives: No

Deleterious Minerals: No

Other Features: The sandstone exposed on the Graham River bank appears to be limited in extent. Outcrops of shale lie to the south of the sandstone.

Diamond Drilling Details: One hole drilled 25 m south of Graham River cut 3 m of shale behind the sandstone face and was abandoned. It is not included in Appendix 1. The presence of the shale standing vertically, severely restricts the volume of sandstone present.

Physical Properties: (Parks, 1914): Specific weight 144.82 lbs/ft³, Absorption 5.428%, Compressive strength 15,670 lbs/in², Transverse strength 1,542 lbs/in²

Comments: Parks (1914) was quite impressed with the sandstones of the Judique area generally and specifically the Graham River red sandstone. In the area the author examined (MacMillan property), there are some thick beds available, but the rock is steeply dipping and severely jointed. There is no potential for quarry development in this specific location, but, due to the nature of the stone observed, further exploration of the Graham River area is warranted.

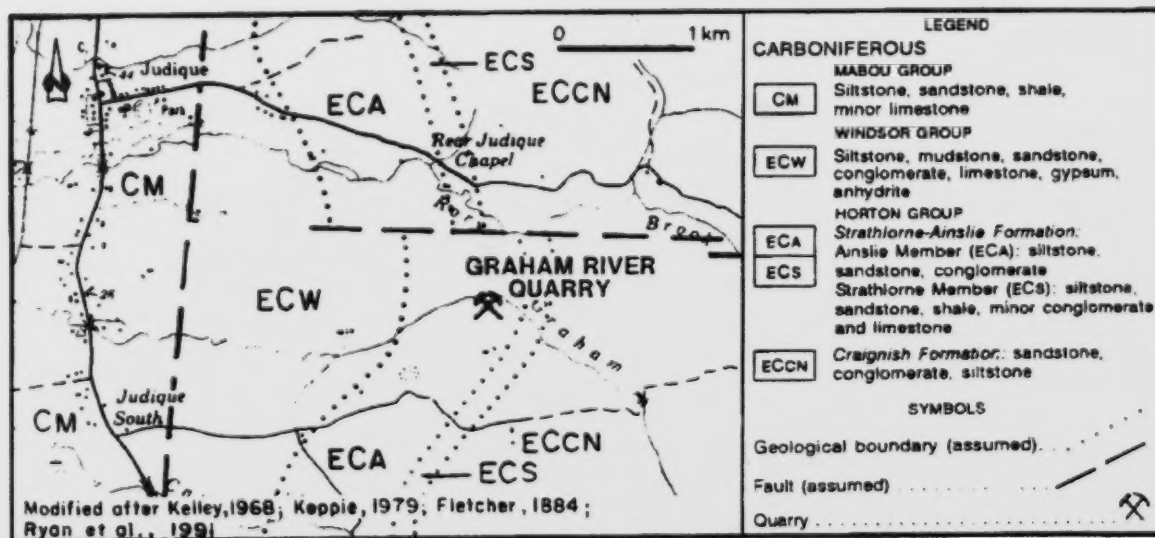


Figure 50. Geological location map for the Graham River Quarry, Inverness County (11F/14).

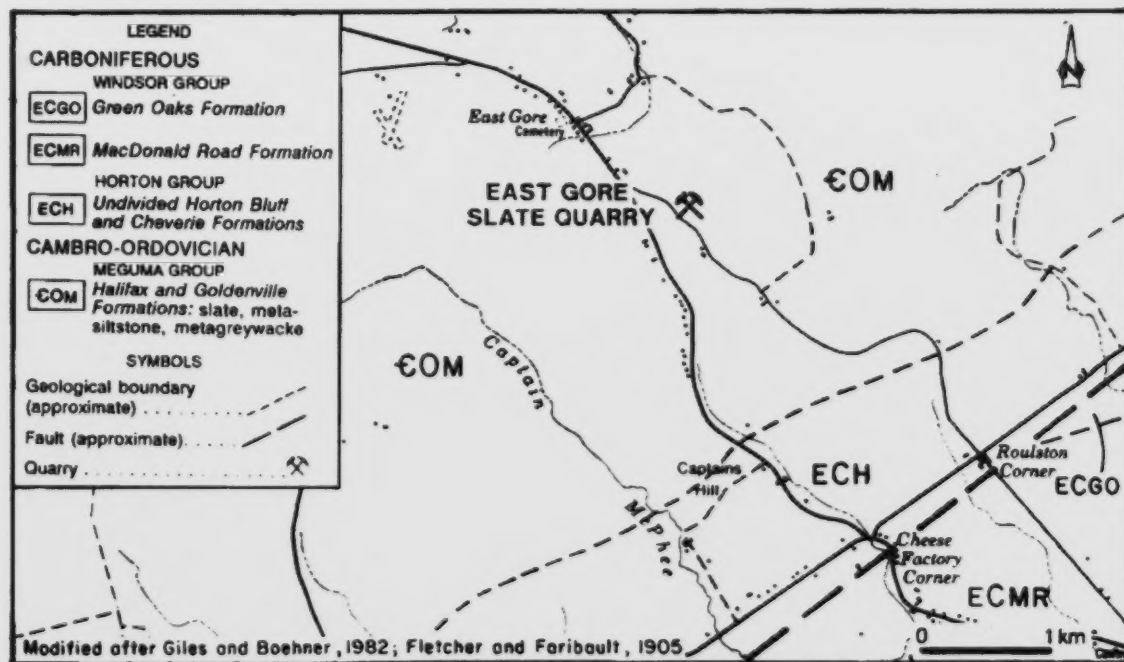
Commercial Stone Name: SLATE, BLUE**County: HANTS****Property Name: EAST GORE SLATE QUARRY, EAST GORE****NTS: 11E/04****Longitude: 63°40'14"****Latitude: 45°06'31"****Sample Number: Not sampled****Date: May 27, 1986****Property Status: Abandoned****Geological Rock Name: Slate and metasiltstone****Possible Uses: Roofing slate****Bedding:** Strike 65°, Dip 85° NW; thickness range 1-5 mm, average range 2 mm**Jointing:** Irregular; limited to moderate**Potential Quarry Block Size:** Roofing slates of practically any size could be fabricated**Outcrop Exposure:** Good**Use of Explosives:** No**Mineralogy:** Typical of slates consisting of very fine grained quartz and feldspar in a matrix of chlorite**Deleterious Minerals:** Minor pyrite**Diamond Drilling Details:** Not drilled**Location Description:** The East Gore Slate Quarry is located on the eastern side of the dirt road from East Gore to Roulston Corner (Fig. 51). It is exactly 1.1 km southeast of the East Gore Cemetery.**Production History:** According to Messervey (1927), the East Gore Slate Quarry was owned by Nova Scotia Slate Quarries and had been in production for several years. The Quarry was also located by Fletcher and Faribault (1905). It is obvious that the Quarry has not produced slate in the last 50 years.**Colour:** Fresh dark blue; weathered blue grey; uniform**Grain Size:** Very fine; uniform**Texture:** Slaty cleavage**Physical Properties:** n/a**Comments:** The East Gore Slate Quarry is a small opening in a hillside about 30 m long and 5 m wide. It is about 4 m deep on the high wall. The stone was quarried in block form and then cut into blocks the required size and split. Slate is abundant in the East Gore area so it is probable that a location could be found which would be better suited for quarrying because this Quarry is beside a travelled road

Figure 51. Geological location map for the East Gore Slate Quarry, Hants County (11E/04).

Commercial Stone Name: SLATE, BLUE
County: HANTS
Property Name: UPPER RAWDON SLATE OCCURRENCE

NTS: 11E/04

Longitude: 63°43'03"

Latitude: 45°04'38"

Sample Number: Not sampled

Date: May 27, 1986

Property Status: Abandoned

Geological Rock Name: Slate and metasiltstone

Possible Uses: Roofing slate

Location Description: Slate outcrops on the western side of Rawdon Brook exactly 1 km northwest of the church in Upper Rawdon (Fig. 52). This location is near the slate quarry shown on Fletcher and Faribault (1905) on, what was then known as, Lavers Brook (Rawdon Brook).

Production History: No recorded production and judging from the slate debris lying beside Rawdon Brook, probably only small amounts were quarried for local use.

Colour: Fresh blue grey; weathered dark grey; uniform

Grain Size: Very fine grained; uniform

Texture: Massive with slaty cleavage; uniform

Bedding: Strike 51°, Dip 74°SE; thickness range 1-5 mm; average range 2 mm

Jointing: Irregular; moderate

Potential Quarry Block Size: A joint surface running across the beds may limit the size of slate to 20 mm²

Outcrop Exposure: Good

Use of Explosives: No

Mineralogy: Typical fine grained slate and metasiltstone consisting of very fine quartz and feldspar grains in a fine chloritic to siliceous matrix.

Deleterious Minerals: No

Other Features: Slate is pyrite free and readily splits on cleavage partings.

Diamond Drilling Details: Not drilled

Physical Properties: n/a

Comments: Although no recognizable quarry was observed, the amount of slate rubble indicates that some quarrying of slate took place. The Rawdon Brook cuts across the strike of the rocks and excellent exposures are visible along the banks which rise 10-12 m. The metasiltstone may make better roofing slate because it is less friable than the slate.

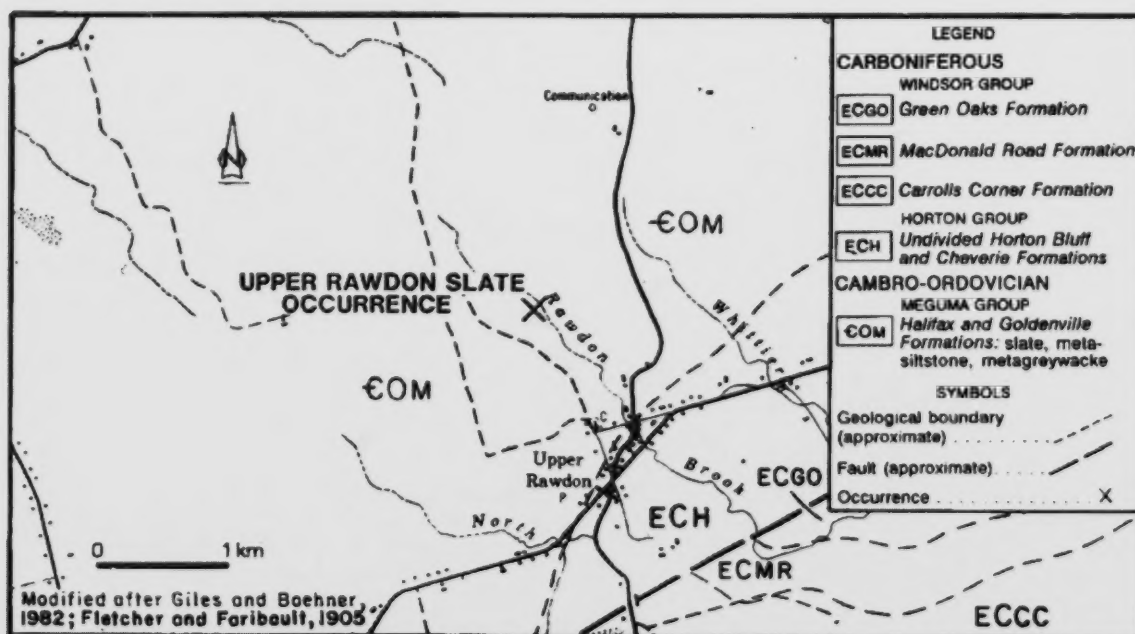


Figure 52. Geological location map for the Upper Rawdon slate occurrence, Hants County (11E/04).

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APPENDIX 1.

NOVA SCOTIA DEPARTMENT OF NATURAL RESOURCES

DIAMOND DRILL RECORDS 1986-1989

FOR BUILDING STONE PROJECT

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*Note: The coordinates and elevations recorded for drillholes ERV-88-01 to ERV-88-05, FFB-87-01, FFB-87-02, NTX-89-01 to NTX-89-03, SMB-86-04, SRL-89-01, SWN-89-01 to SWN-89-03 are approximate. They have not been surveyed. The locations and elevations were taken from 1:10 000 orthophoto maps.

**NOVA SCOTIA DEPARTMENT OF NATURAL RESOURCES
DIAMOND DRILL RECORDS**

AMHERST REDSTONE QUARRY, COATES FARM, AMHERST, CUMBERLAND COUNTY

Hole Number:	AMH-86-01	Azimuth:	Not applicable
Location:	Amherst Redstone Quarry, Coates Farm, Amherst, Cumberland County	Dip:	-90°
Latitude:	45°50'13.22"	Started:	05/05/86
3° MTM:	N 5077291 m	Completed:	07/05/86
Longitude:	64° 11'19.08"	Ultimate Depth:	47.9 m
		Proposed Depth:	47.9 m
3° MTM:	E 328999 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	29.07 m	Figure:	47, p. 83

Depth (m)	Description
0-4.3	Overburden.
4.3-21.9	Predominantly medium grained, pinkish red, massive sandstone; 4.3-5.2 m, joints at 1-3 cm intervals; coarse pebbles at 5.2 m; pebbly at 7.3 m and 8.5 m; light pinkish-grey, limy units at 13.7 m, 15.5 m and 21.9 m; mildly limy matrix at 11.6 m; average joint separation 30-60 cm; muddy, red-grey, calcareous, channel base at 17.2 m; red mud chips at 16.5-17.1 m.
21.9-26.5	Red, finely laminated (locally) siltstone and mudstone. Limestone fragments at 24.1 m and 25.6m.
26.5-29.0	Red to red-brown, limy siltstone and mudstone. Abundant channel breccia. Rock very blocky at 30-60 cm intervals.
29.0-30.5	Red laminated and crosslaminated siltstone. Joints at 1-3 cm. Core angle to bedding about 80°-85°.
30.5-33.7	Pinkish-red, finely laminated siltstone.
33.7-43.6	Pinkish-red, medium grained, massive sandstone. Very consistent colour and grain size. Joints at 60 cm-1 m intervals. Lighter pinkish grey and limy 43.3-43.6 m.
43.6-47.9	Red siltstone and mudstone. finely laminated locally with calcareous nodules and chips. Limy matrix locally. Very blocky and jointed.
47.9	End of Hole.

Hole Number:	AMH-86-02	Azimuth:	Not applicable
Location:	Amherst Redstone Quarry, Coates Farm, Amherst, Cumberland County	Dip:	-90°
Latitude:	45°50'14.00"	Started:	07/05/86
3° MTM:	N 5077315 m	Completed:	08/05/86
Longitude:	64° 11'17.31"	Ultimate Depth:	32.6 m
3° MTM:	E 329027 m	Proposed Depth:	32.6 m
Datum:	Mean sea level	Drilled by:	Nova Scotia Department of Mines and Energy
Elevation:	28.12 m	Geologist:	G. Dickie
		Figure:	47, p. 83

Depth (m)	Description
0-3.7	Overburden.
3.7-22.9	Medium grained, pinkish-red, massive sandstone; 3.7-9.1 m, medium- to coarse-grained; 9.1-22.9 m, medium grained. Locally minor bedding at 80°-85° to core axis. Average joints 30 cm, some up to 60 cm-1 m.
22.9-26.8	Red-brown, laminated siltstone with grey calcareous blotches common 25.3-26.8 m.
26.8-30.2	Red-brown mudstone and siltstone.
30.2-32.6	Red-brown siltstone. Locally laminated at 80° -85° to core axis.
32.6	End of hole.

Hole Number:	AMH-86-03	Azimuth:	Not applicable
Property:	Amherst Redstone Quarry, Coates Farm, Amherst, Cumberland County	Dip:	-90°
Latitude:	45° 50'12.03"	Started:	09/05/86
3° MTM:	N 5077254 m	Completed:	09/05/86
Longitude:	64° 11'19.76"	Ultimate Depth:	32.6 m
3° MTM:	E 328974 m	Proposed Depth:	32.6 m
Datum:	Mean Sea level	Drilled by:	Nova Scotia Department of Mines and Energy
Elevation:	30.72 m	Geologist:	G. Dickie
		Figure:	47, p. 83

Depth (m)	Description
0-3.7	Overburden.
3.7-18.4	Pinkish-red, medium- to coarse-grained sandstone. Mud chips and calcareous at 5.5 m, 7.9 m and 9.4 m. Locally finely laminated at 80-85° to core axis.
18.4-31.1	Mixed red-brown mudstone and siltstone. Locally limy chips and blotches. Very blocky and broken to 25.9 m. Joints common at 20-30 cm.
31.1-32.6	Coarse grained, pinkish-red sandstone. Limy 31.1-31.4 m. Joints at 60 cm-1 m.
32.6	End of hole.

MCKEENS QUARRY, PICTOU COUNTY

Hole Number:	CRP-86-01	Dip:	-90°
Location:	McKeens Quarry, Pictou County	Started:	01/04/86
Latitude:	45°41'28.69"	Completed:	02/04/86
3° MTM:	N 5061742 m	Ultimate Depth:	47.9 m
Longitude:	62° 41'30.75"	Proposed Depth:	47.9 m
3° MTM:	E 211968 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	27.91 m	Figures:	33, p. 60; 34, p. 61; 35, p. 62
Azimuth:	Not applicable		

Depth (m)	Description
0-4.0	Pale tan, coarse grained sandstone, 2.1 m lost, bedding at 5°-85° to core axis, joints at 5-10 cm.
4.0-4.9	Grey-tan, medium grained sandstone. Minor organic partings at 75° to core axis.
4.9-5.8	Tan, coarse grained sandstone. Minor organic partings. Joints at 10-20 cm.
5.8-7.8	Medium grey, fairly massive, medium grained sandstone. Joints at 30-60 cm intervals.
7.8-9.1	Light grey, medium- to coarse-grained sandstone. Channel lag units at 8.1 m and 8.5 m.
9.1-11.0	Brownish-grey, medium to coarse mottled and laminated sandstone. Minor shaly patches and beds.
11.0-11.7	Light grey, fine grained sandstone and siltstone.
11.7-12.0	Brown-tan, medium- to coarse-grained sandstone.
12.0-12.2	Channel lag conglomerate.
12.2-12.6	Brown-tan, coarse sandstone.
12.6-14.0	Light grey, medium- to coarse-grained sandstone. Joints at 30-60 cm intervals.
14.0-15.5	Brown-red mudstone and siltstone. 1.5 m core missing.
15.5-18.9	Brown-red mottled, massive mudstone and siltstone. Variable joints at 20-60 cm
18.9-19.5	As above.
19.5-20.4	Medium grey, fine- to medium-grained sandstone. Bedding at 80° to core axis. Joints at 30 cm intervals.
20.4-25.9	Grey, coarse- to medium-grained arkose to sandstone. Minor organic partings at 75° to core axis. Massive core, joints at 1 m intervals.
25.9-26.2	Grey, fine grained sandstone with common organic partings.
26.2-30.8	Medium to light grey, coarse grained arkose. Abundant organic partings at 75°-80° to core axis. Massive with joints at 60 cm-1 m intervals.
30.8-32.0	Very coarse grained, channel arkose with ripup clasts at channel base.
32.0-35.1	Light to medium grey, medium grained sandstone. Massive unit with 1-1.3 m joints. Minor bedding at 75°-80° to core axis.

Depth (m)	Description
35.1-37.8	Medium to light grey, coarse grained arkose. Abundant shale fragments.
37.8-38.1	Lignite, marcasite, clay.
38.1-43.0	Light to medium grey, coarse sandstone. Minor microconglomerate and organic partings.
43.0-47.9	Medium grey, medium- to coarse-grained sandstone. Joints at 30 cm-1.3 m intervals.
47.9	End of hole.

Hole Number:	CRP-86-02	Dip:	-90°
Location:	McKeens Quarry, Pictou County	Started:	03/04/86
Latitude:	45°41'29.86"	Completed:	03/04/86
3° MTM:	N 5061779 m	Ultimate Depth:	47.9 m
Longitude:	62° 41'33.79"	Proposed Depth:	47.9 m
3° MTM:	E 211903 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	28.01 m	Figures:	33, p. 60; 34, p. 61; 35, p. 62
Azimuth:	Not applicable		

Depth (m)	Description
0-3.0	Overburden.
3.0-8.8	Olive and grey, medium- to coarse-grained arkose. Minor organic partings. Quartz clasts common locally. Limy matrix at 8.8 m.
8.8-14.2	Red-brown to grey mottled mudstone and minor siltstone.
14.2-15.7	Red-brown siltstone grades into sandstone, Joints at 20 cm.
15.7-18.3	Medium grey, medium grained sandstone. Minor organic partings at 80° to core axis.
18.3-21.3	Olive to brownish, medium- to coarse-grained sandstone with blotchy organic patches.
21.3-22.3	Light grey, fine grained, finely laminated sandstone terminates in limy sandstone.
22.3-22.6	Lignite, marcasite in calcareous matrix.
22.6-29.0	Olive, coarse grained arkose. Locally quartz fragments common. Minor organic partings.
29.0-32.0	Medium grey to mottled olive, medium- to coarse-grained sandstone. Minor organic partings. Joints at 15-20 cm.
32.0-33.5	Olive-brown, coarse grained arkose. Joints at 15-60 cm.
33.5-45.6	Medium grey, medium- to coarse-grained arkose. Locally very coarse channel bottoms. Minor organic partings. Joints at 15-60 cm.
45.6-46.0	Medium grey, fine grained sandstone.
46.0-47.9	Medium grey, coarse grained arkose. Channel bottom at 47.8 m.
47.9	End of hole.

Hole Number:	CRP-86-03	Dip:	-90°
Location:	McKeens Quarry, Pictou County	Started:	04/04/86
Latitude:	45°41'27.36"	Completed:	08/04/86
3° MTM:	N 5061700 m	Ultimate Depth:	47.9 m
Longitude:	62° 41'28.82"	Proposed Depth:	47.9 m
3° MTM:	E 212009 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	26.65 m	Figures:	33, p. 60; 34, p. 61; 35, p. 62
Azimuth:	Not applicable		

Depth (m)	Description
0-4.3	Overburden.
4.3-7.2	Green-grey, medium- to coarse-grained sandstone. Blocky with joints at 8 cm intervals. Terminates in 30 cm of coarse, limy sandstone.
7.2-8.1	Light grey, finely laminated mudstone. Shaly partings.
8.1-14.3	Olive green, medium- to coarse-grained sandstone. Locally, finely laminated with organic partings. Coarse, limy sandstone and microconglomerate at 8.2 m and 13.7 m. Joints at 15-30 cm intervals.
14.3-21.3	Mottled red-brown-bluish mudstone and siltstone. Joints at 10-20 cm intervals. Changes to fine grained sandstone from 20.7-21.3 m.
21.3-30.5	Mainly grey-green, medium sandstone. Abundant organic partings locally. Coarse, limy sandstone at 26.5-28.3 m. Abundant organic at 28.7 m.
30.5-30.6	Blue shale, ripup clasts in coarse sandstone matrix.
30.6-42.7	Grey, medium- to coarse-grained sandstone with abundant organic partings. Coarse, limy sandstone and conglomerate at 34.7 m, 38.4 m, 41.5 m. Abundant blue shale, ripup clasts in limy, medium sandstone matrix at 42.7.
42.7-43.3	Grey, fine- to medium-grained sandstone with organic partings.
43.3-44.5	Coarse, limy sandstone and conglomerate with minor organics.
44.5-45.1	Coal, marcasite, limy mudstone and calcite.
45.1-47.9	Mixed, medium grained, grey sandstone and coarse, limy sandstone and conglomerate.
47.9	End of hole.

MACPHERSON QUARRY, EIGHT MILE BROOK, SALT SPRINGS, PICTOU COUNTY

Hole Number:	EMB-86-01	Azimuth:	Not applicable
Location:	MacPherson Quarry, Eight Mile Brook, Salt Springs, Pictou County	Dip:	-90°
Latitude:	45°33'22.88"	Started:	21/03/86
3° MTM:	N 5046983 m	Completed:	24/03/86
Longitude:	62° 52'55.23"	Ultimate Depth:	38.7 m
3° MTM:	E 196900 m	Proposed Depth:	38.7 m
Datum:	Mean sea level	Drilled by:	Nova Scotia Department of Mines and Energy
Elevation:	55.41 m	Geologist:	G. Dickie
		Figures:	42, p. 75; 43, p. 76

Depth (m)	Description
0-4.0	Overburden.
4.0-5.5	Medium grained, tan to brown-grey sandstone. Joints at 20-30 cm intervals, minor bedding at 87° to core axis.
5.5-5.8	Channel base. Dark grey shale fragments in tan sandstone.
5.8-6.2	Medium grained, limy sandstone, grey to whitish grey. Abundant fragments (shale).
6.2-6.5	Blue-grey, channel conglomerate, very limy.
6.5-8.7	Red-brown mudstone and siltstone, very blocky and jointed at 10-20 cm intervals. Slightly limy.
8.7-11.3	Mottled grey-brown to grey, fine- to medium-grained sandstone. Finely laminated to 9.8 m at 80°-85° to core axis. Crossbeds at 60°-70° to core axis. Joints at 30 cm intervals. Grey limestone at 9.3-9.4 m and 10.3-10.4 m.
11.3-15.8	Brown-red-grey, medium grained sandstone. Finely laminated at 75° to core axis. Fairly consistent colour. Minor grey patches. Joints from 30-50 cm with average 40 cm. Grey, patchy limestone at 12.5-12.6 m.
15.8-18.7	Blocky, red-brown mudstone and siltstone. Joints at 10-20 cm intervals. Grades down into siltstone. Sharp contact with sandstone unit.
18.7-20.1	Brown-grey, fine grained sandstone.
20.15-25.6	Red-brown siltstone and minor mudstone. Shaly clasts at 23.5-24.1 m.
25.6-26.5	Red-brown, medium grained, massive sandstone. Joints at 10-20 cm intervals.
26.5-28.7	Medium-grained, finely laminated, grey-brown sandstone. Core angle to bedding 75°. No joints. Continuous unit.
28.7-31.1	Red-brown, blocky siltstone and minor mudstone. Pebbly at 30.2-30.5 m.
31.1-38.7	Slightly mottled, red-brown and grey mudstone and siltstone. Abundant, limy, grey laminae and bands. Minor, light grey limestone at 36.9 m. Finely laminated locally at 85°-87° to core axis.
38.7	End of hole.

Hole Number:	EMB-86-02	Azimuth:	Not applicable
Location:	MacPherson Quarry, Eight Mile Brook, Salt Springs, Pictou County	Dip:	-90°
Latitude:	45°33'23.57"	Started:	25/03/86
3° MTM:	N 5047004 m	Completed:	25/03/86
Longitude:	62° 52'54.60"	Ultimate Depth:	35.7 m
3° MTM:	E 196914 m	Proposed Depth:	47.9 m
Datum:	Mean sea level	Drilled by:	Nova Scotia Department of Mines and Energy
Elevation:	55.33 m	Geologist:	G. Dickie
		Figures:	42, p. 75; 43, p. 76

Depth (m)	Description
0-4.0	Overburden.
4.0-7.3	Mainly grey, finely laminated, medium grained limestone and limy sandstone. Bedding at 80°-85° to core axis although some channels 65°-70° to core axis. Channel breccia at 4.6 m. Limy mudstone at 6.6 m. Joints at 20-30 cm intervals.
7.3-11.5	Red-brown siltstone and minor mudstone. Locally, finely laminated with bedding at 75°-85° to core axis. Minor limy bands and interbeds.
11.5-15.7	Brown-red, fine- to medium-grained, locally finely laminated and crossbedded sandstone. Minor limy unit at 14-14.1 m. Bedding generally at 80°-85° to core axis. Joints at 10-15 cm intervals.
15.7-16.0	Light grey, finely laminated limestone and limestone breccia. Fines downward.
16.0-17.1	Red-brown, fine grained sandstone, fairly massive with minor bedding and crossbedded channels. Joints at 30-60 cm intervals. Terminates in 10 cm of limy mudstone.
17.1-17.2	Red-brown, limy mud.
17.2-21.2	Red-brown mudstone and siltstone. Locally abundant limy interbeds and ripup clasts. Locally sandy beds. Joints at 10-20 cm intervals.
21.2-26.2	Mainly red-brown siltstone with minor mudstone. Frequent limy units up to 15 cm thick. Also frequent limy interbeds and breccia.
26.2-30.8	Brown, fine- to medium-grained sandstone. Locally finely laminated at 80°-85° to core axis. Some channels at 60° to core axis. Light grey limestone at 29.1-30.5 m. Joints at 30-60 cm intervals.
30.8-31.2	Blue-grey, fine grained sandstone and channel breccia.
31.2-31.8	Brown, medium grained, laminated sandstone.
31.8-31.9	Brown-grey mudstone.
31.9-32.8	Medium grey to brown sandstone and limy sandstone.
32.8-33.5	Dark blue-grey mudstone and finely laminated light grey limestone. Joints at 10-15 cm intervals.
33.5-35.7	Red-brown mudstonewith limy clasts throughout. Joints at 10-60 cm intervals.
35.7	End of hole.

Hole Number:	EMB-86-03	Azimuth:	Not applicable
Location:	MacPherson Quarry, Eight Mile Brook, Salt Springs, Pictou County	Dip:	-90°
Latitude:	45°33'24.45"	Started:	26/03/86
3° MTM:	N 5047031 m	Completed:	27/03/86
Longitude:	62° 52'54.18"	Ultimate Depth:	41.8 m
3° MTM:	E 196924 m	Proposed Depth:	47.9 m
Datum:	Mean sea level	Drilled by:	Nova Scotia Department of Mines and Energy
Elevation:	56.56 m	Geologist:	G. Dickie
		Figures:	42, p. 75; 43, p. 76

Depth (m)	Description
0-5.2	Overburden.
5.2-11.6	Medium grained, grey sandstone. Minor organic partings. Most bedding at 85° to core axis. From 5.2-7.3 m joints at 15-30 cm intervals; from 7.3-11.6 m joints at 30-60 cm intervals.
11.6-11.7	Light grey, medium grained limestone or limy sandstone.
11.7-11.8	Lignite and marcasite (pyrite).
11.8-13.4	Grey to tan-grey, medium grained sandstone. Common organic partings at 75° to core axis. Joints at 30-80 cm intervals.
13.4-13.7	Light grey, limy sandstone with organic partings top and bottom.
13.7-14.8	Grey, medium grained, banded sandstone with organics.
14.8-15.8	14.8 m finely banded limy sandstone; 14.8-15.1 m limestone channel breccia; 15.1-15.5 m brownish-grey, limy mudstone and breccia; 15.5-15.8 m light grey limestone.
15.8-16.2	Brown-grey, medium grained, massive sandstone.
16.2-16.3	As above. limy.
16.3-16.9	Mainly brown-grey, medium grained sandstone locally laminated with organic partings. Fines down.
16.9-17.4	Medium grey, finely laminated limestone and limy sandstone.
17.4-17.7	Medium grey, laminated sandstone.
17.7-17.8	Dark grey, limy sandstone with organic partings.
17.8-18.3	Brown-grey, fine- to medium-grained sandstone, limy patches.
18.3-18.6	Light to medium grey, limy sandstone and limestone.
18.6-20.1	18.6-18.7 m light grey limestone; 18.7-20.1 m brownish-red, limy mudstone and siltstone.
20.1-21.9	Red-brown mudstone and siltstone.
21.9-22.3	Red-brown, limy mudstone.
22.3-25.0	Red-brown mudstone and siltstone. Minor limy beds. Joints at 10-15 cm intervals.
25.0-25.1	Red-brown, limy siltstone.

Depth (m)	Description
25.1-26.4	Red to grey-brown siltstone and mudstone. Finely laminated 26.2-26.4 m with organic partings.
26.4-26.5	Red-brown limestone.
26.5-27.7	Red-brown, jointed mudstone.
27.7-27.9	Red-brown, limy mudstone.
27.9-28.2	Red-brown mudstone.
28.2-28.5	Red-brown, limy mudstone.
28.5-28.8	Red-brown mudstone.
28.8-28.9	Red-brown, limy mudstone.
28.9-30.2	Grey-brown, medium grained, locally laminated sandstone. Minor limy units.
30.2-30.3	light to medium grey, limy sandstone.
30.3-30.6	Grey-brown, medium grained sandstone. Bedding at 75°-80° to core axis.
30.6-31.1	Medium grey, limy sandstone. Joints at 30-60 cm intervals.
31.1-34.9	Mixed medium grained, grey-brown sandstone and limy sandstone. Bottoms in finely laminated, light grey limestone.
34.9-36.0	Light grey, laminated, limy, medium grained sandstone or limestone.
36.0-41.8	Red-brown, limy mudstone and siltstone. Locally mottled with limy patches.
41.8	End of hole.

Hole Number: EMB-86-04
Location: MacPherson Quarry, Eight Mile Brook, Salt Springs, Pictou County
Latitude: 45°33'25.07"
3° MTM: N 5047050 m
Longitude: 62° 52'53.83"
3° MTM: E 196932 m
Datum: Mean sea level
Elevation: 55.80 m

Azimuth: Not applicable
Dip: -90°
Started: 21/04/86
Completed: 23/04/86
Ultimate Depth: 26.5 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines and Energy
Geologist: G. Dickie
Figures: 42, p. 75; 43, p. 76

Depth (m)	Description
0-4.6	Overburden.
4.6-6.1	Dark brown, fine grained sandstone. Massive unit, joints at 60 cm.
6.1-6.4	Dark brown mudstone ripup clasts in light grey, fine- to medium-grained sandstone matrix.

Depth (m)	Description
6.4-8.5	Medium grey, medium grained sandstone. Massive, joints at 60 cm intervals. Terminates light grey, finely laminated sandstone.
8.5-8.8	Light grey, limy breccia.
8.8-12.8	Medium grey, medium grained sandstone with minor organic partings. Core angle to bedding 75°-80°.
12.8-13.1	Light grey, laminated, limy sandstone. Blocky.
13.1-13.7	Finely laminated, medium grained sandstone.
13.7-15.2	Medium grey, massive sandstone. Minor organic partings. Joints at 60 cm-1 m.
15.2-15.7	Medium grey, limy, massive, medium grained sandstone.
15.7-15.8	Light grey, limy sandstone with dark grey ripup clasts.
15.8-20.6	Medium grey, medium grained sandstone. Abundant organics 17.7-18.3 m. Slightly limy. Massive unit, joints occur up to 1 m apart.
20.6-20.7	Light grey, limy sandstone with ripup clasts.
20.7-24.4	Red-brown mottled, limy mudstone. Very blocky with joints at 60 cm-1 m intervals.
24.4-26.5	Mottled grey-brown siltstone. Joints at 10-30 cm.
26.5	End of hole.

Hole Number: EMB-86-05
Location: MacPherson Quarry, Eight Mile Brook, Salt Springs, Pictou County
Latitude: 45°33'25.70"
3° MTM: N 5047069 m
Longitude: 62° 52'53.49"
3° MTM: E 196940 m
Datum: Mean sea level
Elevation: 55.11 m

Azimuth: Not applicable
Dip: -90°
Started: 24/04/86
Completed: 25/04/86
Ultimate Depth: 26.5 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines and Energy
Geologist: G. Dickie
Figures: 42, p. 75; 43, p. 76

Depth (m)	Description
0-4.6	Overburden.
4.6-7.3	Light brown, medium grained, slightly limy sandstone. Joints at 20 cm intervals.
7.3-8.8	Medium grey-brown, fine- to medium-grained sandstone. Common organic partings. Joints at 1-1.2 m intervals.
8.8-9.4	Light grey, limy, channel breccia. Locally, finely laminated. Less calcareous with interesting ripup clasts.

Depth (m)	Description
9.4-9.8	Light grey breccia with dark grey ripup clasts in fine sandstone matrix.
9.8-11.0	Medium to light grey, finely laminated, medium grained sandstone. Abundant partings. Joints at 30 cm.
11.0-15.5	Medium grey, medium grained, massive sandstone with minor organic partings. Locally slightly limy. Joints 30 cm-1 m.
15.5-16.8	Medium grey, finely laminated sandstone with abundant organic partings. Bedding at 80° to core axis. Joints at 60 cm.
16.8-17.1	Medium to light grey, limy, medium grained sandstone.
17.1-17.2	Light grey, limy, channel breccia.
17.2-17.4	Medium to light grey, limy, medium grained sandstone.
17.4-18.9	Light to medium grey, fine- to medium-grained sandstone. Locally limy above channel breccia.
18.9-20.3	Medium blue-grey, limy mudstone and mudstone breccia. Locally limestone at 19.5 m
20.3-22.3	Light to medium grey to brownish-grey, laminated, fine- to medium-grained sandstone. Locally limy and abundant organic partings.
22.3-26.5	Red-brown mudstone and siltstone. Mottled and limy. Joints at 60 cm-1 m.
26.5	End of hole.

Hole Number:	EMB-86-06	Azimuth:	Not applicable
Location:	MacPherson Quarry, Eight Mile Brook, Salt Springs, Pictou County	Dip:	-90°
Latitude:	45°33'27.65"	Started:	30/07/86
3° MTM:	N 5047130 m	Completed:	01/08/86
Longitude:	62° 52'53.50"	Ultimate Depth:	35.4 m
3° MTM:	E 196941 m	Proposed Depth:	Not available
Datum:	Mean sea level	Drilled by:	Nova Scotia Department of Mines and Energy
Elevation:	57.09 m	Geologist:	G. Dickie
		Figures:	42, p. 75; 43, p. 76

Depth (m)	Description
0-4.6	Overburden.
4.6-4.9	Light grey, calcareous sandstone.
4.9-9.8	Finely laminated, crossbedded siltstone and fine sandstone. Red brown colour. Core broken at 10 cm intervals.
9.8-14.6	Fine- to medium-grained, grey to brownish-grey sandstone. Lamination at 80° to core axis. 13.1-14.6 m, solid core.

Depth (m)	Description
14.6-22.6	Predominantly red-brown siltstone with minor fine sandstone. Locally crossbedded. Core very blocky and broken at 5-10 cm intervals.
22.6-25.0	Red-brown siltstone and fine sandstone. Locally planer laminated at 85° to core axis.
25.0-29.9	Brownish-grey, fine- to medium-grained sandstone. Massive unit with 1-1.2 m sections of core. Becomes mottled grey and calcareous below 28.3 m.
29.9-30.5	Finely laminated, blue mudstone/siltstone.
30.5-33.2	Light grey, medium grained, calcareous sandstone. Abundant organic partings 30.5-31.1 m., 32-32.9 m. Massive unit 31.1-32 m.
33.2-35.4	Finely laminated and crossbedded, red-brown siltstone and fine grained sandstone. Blocky.
35.4	End of hole.

Hole Number: EMB-86-07
Location: MacPherson Quarry, Eight Mile Brook, Salt Springs, Pictou County
Latitude: 45°33'28.75"
3° MTM: N 5047162 m
Longitude: 62° 52'50.90"
3° MTM: E 196997 m
Datum: Mean sea level
Elevation: 56.05 m

Azimuth: Not applicable
Dip: -90°
Started: 05/08/86
Completed: 05/08/86
Ultimate Depth: 19.8 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines and Energy
Geologist: G. Dickie
Figures: 42, p. 75; 43, p. 76

Depth (m)	Description
0-4.9	Overburden.
4.9-9.8	Red-brown to brown mudstone to 5.8 m, coarsens to siltstone and fine sandstone at 9.8 m. Terminates in mud chip conglomerate at 9.7-9.8 m.
9.8-17.4	Fine- to medium-grained, brown-grey to medium grey sandstone. Finely laminated 14.3-15.2 m at 75°-80° to core axis. Mud chips at 16.9 m. Mildly calcareous 17.1-17.4 m. Joint frequency is from 60 cm-2 m.
17.4-19.8	Red-brown mudstone to 15.2 m then coarsens to red-brown siltstone. Finely laminated and highly jointed and broken.
19.8	End of hole.

WEST ERINVILLE QUARRY, GUYSBOROUGH COUNTY

Hole Number: ERV-88-01
Location: West Erinville Quarry,
 Guysborough County
Latitude: *45°23'36"
3° MTM: *N 5027970 m
Longitude: *61° 46'26"
3° MTM: *E 283355 m
Datum: Mean sea level
Elevation: *125 m
Azimuth: Not applicable

Dip: -90°
Started: 20/10/88
Completed: 22/10/88
Ultimate Depth: 62.48 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figures: 6, p. 12; 7, p. 13

Depth (m)	Description
0-0.30	Overburden.
0.30-11.89	Medium grained pyroxene gabbro. Pyroxene grains up to 4 mm long with about equal size plagioclase. Core is grey dry and dark grey wet. From 1-9.14 m rock is highly jointed with chlorite developed along joints. Core angle to jointing varies from 0° -45°. Minor pyrite on joints.
11.89-13.41	Fine grained, black gabbro to diabase. Sharp contact with coarser rock.
13.41-62.48	Medium grained, grey to dark grey gabbro. 13.72-45.72 m core is broken at 30-70 cm intervals; 45.72-62.48 m some sections up to 1 m long; 59.44-62.48 m unbroken core.
62.48	End of hole.

Hole Number: ERV-88-02
Location: West Erinville Quarry,
 Guysborough County
Latitude: *45°23'38"
3° MTM: *N 5028025 m
Longitude: *61° 46'46"
3° MTM: *E 282920 m
Datum: Mean sea level
Elevation: *129.5 m
Azimuth: Not applicable

Dip: -90°
Started: 22/10/88
Completed: 24/10/88
Ultimate Depth: 36.58 m
Proposed Depth: 60.96 m
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figures: 6, p. 12; 7, p. 13

Depth (m)	Description
0-0.61	Overburden

Depth (m)	Description
0.61-36.58	Finely laminated black slate. Pyrite locally abundant. Core angle to bedding variable from 0° -45° over the length of the hole. Pyrite occurs along bedding planes and as fracture filling; where fracture filling also some pyrrhotite. Pyrite abundant at 16.76 m. Pyrite and pyrrhotite in crosscutting veins 4 mm wide at 19.51 m, 20.12 m, 21.64 m, 23.16 m, 24.38 m, 24.69 m and 25.60 m. Graphitic slate 16.76-19.81 m. 1 cm quartz vein with pyrite at 26.21 m. Adjacent bleached zone from 25.60-26.52 m. Pyrite and pyrrhotite in fracture filling at 30.48 m. Abundant pyrite on brittle fracture slips at 33.53-36.58 m. Core very blocky from 30.48-36.58 m.
36.58	End of hole.

Hole Number: ERV-88-03
Location: West Erinville Quarry
 Guysborough County
Latitude: *45°23'30"
3° MTM: *N 5027790 m
Longitude: *61° 46'36"
3° MTM: *E 283145 m
Datum: Mean sea level
Elevation: *151.0 m
Azimuth: Not applicable

Dip: -90°
Started: 22/10/88
Completed: 28/10/88
Ultimate Depth: 62.18 m
Proposed Depth: 60.96
Drilled by: Nova Scotia Department of Mines and Energy
Geologist: G. Dickie
Figures: 6, p. 12; 7, p. 13

Depth (m)	Description
0-0.61	Overburden.
0.61-18.29	Strongly chloritized, medium grained gabbro. Feldspars white and bleached. Pyroxenes and hornblende(?) chloritized. Core is strongly jointed predominantly at 45° to core axis. Joints also common at 30° to core axis. Badly broken at 10.97.
18.29-20.42	Chloritized, finer grained gabbro. Highly fractured. Minor calcite veins at 19.81 and 20.12 m.
20.42-30.48	Moderately chloritized, medium grained gabbro. Strongly fractured at 24.38-27.43 m.
30.48-62.18	Weakly chloritized, medium grained gabbro. Calcite veining at 59.74 m and 60.96 m. Predominant joints at 40°-45° to core axis at 1 m intervals.
62.18	End of hole.

Hole Number: ERV-88-04
Location: West Erinville Quarry,
 Guysborough County
Latitude: *45°23'36"
3° MTM: *N 5027970 m
Longitude: *61° 46'26"
3° MTM: *E 283355 m
Datum: Mean sea level
Elevation: *125 m
Azimuth: Not applicable

Dip: -90°
Started: 20/10/88
Completed: 22/10/88
Ultimate Depth: 62.48 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figures: 6, p. 12; 7, p. 13

Depth (m)	Description
0-0.30	Overburden.
0.30-11.89	Medium grained pyroxene gabbro. Pyroxene grains up to 4 mm long with about equal size plagioclase. Core is grey dry and dark grey wet. From 1-9.14 m rock is highly jointed with chlorite developed along joints. Core angle to jointing varies from 0° -45°. Minor pyrite on joints.
11.89-13.41	Fine grained, black gabbro to diabase. Sharp contact with coarser rock.
13.41-62.48	Medium grained, grey to dark grey gabbro. 13.72-45.72 m core is broken at 30-70 cm intervals; 45.72-62.48 m some sections up to 1 m long; 59.44-62.48 m unbroken core.
62.48	End of hole.

Hole Number: ERV-88-05
Location: West Erinville Quarry,
 Guysborough County
Latitude: *45°23'20"
3° MTM: *N 5027465 m
Longitude: *61° 46'30"
3° MTM: *E 283275 m
Datum: Mean sea level
Elevation: *153.5 m
Azimuth: Not applicable

Dip: -90°
Started: 08/12/88
Completed: 12/12/88
Ultimate Depth: 10.97 m
Proposed Depth: 30.48 m
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figures: 6, p. 12

Depth (m)	Description
0-9.75	Overburden.
9.75-10.97	Blue-grey shale.
10.97	End of hole.

FIRST FORK BROOK OCCURRENCE, INVERNESS COUNTY

Hole Number:	FFB-87-01	Dip:	-90°
Location:	First Fork Brook Occurrence, Inverness County	Started:	27/07/87
Latitude:	*46°28'20"	Completed:	30/07/87
3° MTM:	*N 5148010 m	Ultimate Depth:	60.96 m
Longitude:	*60° 53'20"	Proposed Depth:	Not available
3° MTM:	*E 351740 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	*440.0 m	Figure:	20, p. 36
Azimuth:	Not applicable		

Depth (m)	Description
0-60.96	Coarse grained, pink to reddish granite to leucogranite. Average composition: 55% pink orthoclase; 40% grey quartz; and 5% biotite. Feldspar is 20-30% kaolinized. Granite is but by fine grained equigranular granite dykes of similar composition to the host granite. Granite is broken and vertical joints predominate over the intervals 11-11.5 m and 32.3-32.7 m. Granite is weathered and eroded from 51.8-53.3 m. Fresh rock from 54.9-60.69 m. Fine grained aplite dykes at 32.6-33.5 and 43.1-43.3 m.
60.96	End of hole.

Hole Number:	FFB-87-02	Dip:	-90°
Location:	First Fork Brook Occurrence, Inverness County	Started:	31/07/87
Latitude:	*46°28'24"	Completed:	05/08/87
3° MTM:	*N 5148135 m	Ultimate Depth:	32.6 m
Longitude:	*60° 53'11"	Proposed Depth:	Not available
3° MTM:	*E 351930 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	*438.0 m	Figure:	20, p. 36
Azimuth:	Not applicable		

Depth (m)	Description
0-32.6	Coarse grained, pink to red biotite granite. Average composition: 60% orthoclase; 35% grey quartz; and 2-5% biotite. 0-9.1 m moderately kaolinized and weak fabric at 30° to core axis; 9.1-14.3 m strongly kaolinized, eroded and weathered, granite very blocky and broken; 14.3-27.7 m lightly kaolinized pink granite; 27.7-28.0 m fine grained, pink felsic dyke, dyke has kaolinized borders; 28.0-32.6 m moderately kaolinized granite.
32.6	End of hole.

GLENCOE MARBLE OCCURRENCE, INVERNESS COUNTY

Hole Number:	Glencoe 88-1	Dip:	-45°
Location:	Glencoe Marble Occurrence, Inverness County	Started:	20/06/88
Latitude:	45°55'25.39"	Completed:	29/06/88
3° MTM:	N 5086908 m	Ultimate Depth:	150.3 m
Longitude:	61° 15'47.88"	Proposed Depth:	152.4 m
3° MTM:	E 323159 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	255.02 m	Figure:	24, p. 48
Azimuth:	180°		

Depth (m)	Description
0-1.2	Overburden.
1.2-5.5	White, medium- to coarse-grained, crystalline marble.
5.5-6.7	Mixed white marble with blue-grey bands up to 25% of core.
6.7-12.5	White to off white marble with buff bands up to 25-30% of core. Banding at 45°-50° to core axis.
12.5-14.3	White marble with blue-grey bands up to 30% of core.
14.3-17.4	White to bluish-white, crystalline marble. Minor blue-grey bands up to 5% of core.
17.4-19.5	Blue-grey marble breccia with fragments up to 1 cm in diameter.
19.5-24.1	White to blue-grey marble. Grey bands about 10% of core.
24.1-24.7	Blue-grey to grey banded marble.
24.7-28.3	Bluish-white mottled marble.
28.3-29.9	Grey banded marble. Mottled grey about 75% of core.
29.9-32.0	White to blue-grey banded marble. Strongly banded at 31.1 m with black to green bands and blebs. Pyrite blebs at 30.5 m and 30.8 m.
32.0-33.5	White crystalline marble.
33.5-45.1	Mixed white and banded blue-grey marble.
45.1-67.7	Predominantly white to bluish-white banded and mottled crystalline marble. Dark grey banding about 30-60 cm intervals with some fraction at 1 m intervals. Fractures tend to be parallel to banding at 45°-55° to core axis.
67.7-97.6	As above. Thin, grey limestone band at 92.3-92.6 m. From 73.2-76.2 m blue-grey to white ratio about 50%, otherwise about 30% blue. Good zone of pure white from 92.7-95.1 m.
97.6-104.5	As above. Pure white from 100.6-101.5 m.
104.5-107.6	White and grey-brown mottled marble. Brown patches up to 3 cm long which constitute 30% of core.

Depth (m)	Description
107.6-127.1	White to bluish-white to green speckled and banded marble. Coarsening grain size. Rock is broken at 10-15 cm intervals generally along banding at 45° to core axis..
127.1-143	As above. Becomes fairly coarse grained. Distinct green cast to marble.
143-150.3	Grey, medium grained hornblende granodiorite. Sharp contact at 143 m at 45° to core axis. Chilled margin is fine grained, bleached and about 30 cm wide. Marble xenoliths at 146 m and 149.7 m give greenish cast to granite and diffuse boundaries.
150.3	End of hole.

Hole Number:	Glencoe 88-2	Dip:	-45°
Location:	Glencoe Marble Occurrence, Inverness County	Started:	04/07/88
Latitude:	45°55'26.78"	Completed:	07/07/88
3° MTM:	N 5086951 m	Ultimate Depth:	77.4 m
Longitude:	61° 15'47.96"	Proposed Depth:	76.2 m
3° MTM:	E 323158 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	256.25 m	Figure:	24, p. 48
Azimuth	180°		

Depth (m)	Description
0-1.2	Overburden.
1.2-8.5	Mottled and banded white-blue grey marble. Very blocky and broken core.
8.5-59.7	As above. Core angle to banding is 45°-50°. Dark grey-blue banding about 30% of core. Minor pyrrhotite associated with dark bands. Good white zone 23.2-29.3 m.
59.7-77.4	As above. Mixed white to blue-grey banded marble. Greyer sections from 61-64 m and 74.7-77.4 m.
77.4	End of hole.

Hole Number:	Glencoe 88-3	Dip:	-45°
Location:	Glencoe Marble Occurrence, Inverness County	Started:	11/07/88
Latitude:	45°55'28.69"	Completed:	12/07/88
3° MTM:	N 5087010 m	Ultimate Depth:	12.5 m
Longitude:	61° 15'47.93"	Proposed Depth:	76.2 m
3° MTM:	E 323158 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	254.64 m	Figure:	24, p. 48
Azimuth:	180°		

Depth (m)	Description
0-1.8	Overburden.
1.8-5.5	Reddish-grey, medium grained hornblende granite. Very blocky and broken with limestone xenoliths. About 60 cm of core missing.
5.5-10.4	Pale grey to slightly reddish hornblende granite. Greenish zone from 9.4-10.4 m near marble xenoliths. About 1.4 m of core missing. Contact with marble at 10.4 m.
10.4-12.5	White and blue banded marble chips. About 60 cm of chips. Hole abandoned due to bad ground at 12.5 m.
12.5	End of hole.

Hole Number:	Glencoe 88-4	Dip:	-45°
Location:	Glencoe Marble Occurrence, Inverness County	Started:	12/07/88
Latitude:	45°55'26.65"	Completed:	19/07/88
3° MTM:	N 5086947 m	Ultimate Depth:	151.5 m
Longitude:	61° 15'48.32"	Proposed Depth:	76.2 m
3° MTM:	E 323150 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	256.33 m	Figure:	24, p. 48
Azimuth	180°		

Depth (m)	Description
0-1.2	Overburden.
1.2-4.3	Banded white and bluish-white marble. Vuggy at top with minor kaolin and silica sand particles present. Core angle to banding is 45° at 2.1 m. Secondary veining completely healed with recrystallized CaCO ₃ . Core angle to banding 50° at 3.4 m. Minor pinkish cast to some veining. Pale grey fragments in healed marble at 3.7 m.
4.3-12.8	Pinkish-white marble veinlets and veins cutting white marble. Pale bands of green and brown.
12.8-17.1	White marble with up to 25% blue-grey bands. Pyrite along banding locally. Core angle to banding 50°.
17.1-21.3	Mixed white and blue-grey marble. On average 15% blue bands. Core angle to banding 50°. Rock broken along banding at 60 cm intervals.
21.3-25.6	Good section of white marble. Pale blue-grey cast. Core angle to banding 50°. Rock broken along banding mainly, but sometimes 90° to banding. Small blebs of disseminated pyrite common up to 5 mm in diameter.
25.6-29.9	Blue-grey banded marble.
29.9-46.9	Mixed white and blue-grey banded marble. Most breakage along banding. Core angle to banding 40°. Minor pyrite.
46.9-50.0	Pure white marble with a narrow zone of blue banding from 47.4-47.5 m.

Depth (m)	Description
50.0-104.2	Mixed white and blue-grey banded marble.
104.2-114.0	Mixed, banded, blue-grey and white marble. Banded stone 50% of total. Core angle to banding 18°. Narrow band (15 cm) of argillite at 113.4 m at 17° to core axis. Calcite crystals growing into cavity along fracture at 20° to core axis.
114.0-123.1	As above. Core angle to banding 17°. Core angle to fracturing 40°. One length of core 1.4 m. Shearing along thin band of argillite.
123.1-123.7	Grey banded limestone and marble. Core angle to banding 20°.
123.7-132.3	Mixed grey banded and brecciated limestone and marble. Core angle to banding varies from 20°-35°. Minor pyrite in blebs and stringers along grey bands. Pure white, coarse grained.
132.3-134.1	White to greyish-white marble.
134.1-134.6	Marble breccia with veins of grey-green calcite with pyrite/pyrrhotite and small amount of brown platy mineral (mica?).
134.6-137.5	Greyish-white, pale, banded marble. Fractures run at 45° to core axis and 90° to banding.
137.5-138.1	Grey marble breccia with minor pyrite and pyrrhotite.
138.1-143.6	Mixed white and grey, slightly banded marble. About 30% white.
143.6-150.6	Finely laminated, grey, banded limestone. Core angle to banding 20°. Pyrite stringers and blebs common.
150.6-151.5	Greenish-grey, very fine grained chert/quartzite.
151.5	End of hole.

Hole Number:	Glencoe 88-5	Dip:	-45°
Location:	Glencoe Marble Occurrence, Inverness County	Started:	21/07/88
Latitude:	45°55'23.67"	Completed:	26/07/88
3° MTM:	N 5086854 m	Ultimate Depth:	39.9 m
Longitude:	61° 15'48.23"	Proposed Depth:	76.2 m
3° MTM:	E 323152 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	249 m	Figure:	24, p. 48
Azimuth	180°		

Depth (m)	Description
0-2.4	Overburden.
2.4-11.9	Medium grained, white to greyish-white crystalline marble.
11.9-18.0	Medium grained, grey hornblende granodiorite.
18.0-23.0	White marble, as above.

Depth (m)	Description
23.0-24.7	Grey, medium grained hornblende granodiorite.
24.7-32.0	Reddish-grey, medium grained hornblende, muscovite granodiorite. Minor pyrite and pyrrhotite associated with green and white calcite, epidote(?) veins. Hematite alteration borders veins. Dark grey to black xenoliths common. Most veins oriented at 30° to core axis.
32.0-39.9	As above. Pyrite and minor sphalerite(?) associated with quartz vein at 33.5 m. Pyrite also with skarn(?) patches from 32.0-33.5 m. Secondary muscovite(?) common in altered recrystallized zones. Marble from 39.3-39.6 m. Recrystallized at contacts to pinkish colour. Abundant hard, black crystals at upper contact and 5 cm into marble.
39.9	End of hole.

MACKENZIE QUARRY, HARDWOOD HILL, PICTOU COUNTY

Hole Number:	McK 86-01	Dip:	-90°
Location:	MacKenzie Quarry, Hardwood, Hill, Pictou County	Started:	21/11/86
Latitude:	45°39'33.75"	Completed:	24/11/86
3° MTM:	N 5058368 m	Ultimate Depth:	30.5 m
Longitude:	62° 50'3.35"	Proposed Depth:	30.5 m
3° MTM:	E 200819 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	118.84 m	Figure:	31, p. 57
Azimuth:	Not applicable		

Depth (m)	Description
	Apparently no overburden.
0-6.6	Medium brown sandstone, fine- to medium-grained, common breakage along bedding planes resulting in abundant 2-5 cm pieces of core, macerated carbon material common. Small channel lag zone at 5.7-5.8 m (fractures 70°-80° to core).
6.6-8.8	Medium grey lag or breccia composed of mud clasts in a sand matrix, very carbonate rich in matrix, mud clasts are limy. In general appears quite competent, fractures 15-20 cm apart and generally correspond to bedding plane breaks.
8.8-20.3	Grey to grey-brown sandstone, fine- to medium-grained, common macerated carbon on bedding planes. Generally very competent with bedding plane fractures 2-60 cm apart (70°-80° to core). Varies from poorly bedded to approaching massive. Very minor lag clasts observed scattered throughout, minor joints cutting core at 30°-45° to core axis.
20.3-20.7	Medium grey lag or breccia similar to unit at 6.6-8.8 m, very limy and quite hard, mud clasts and coaly fragments common.
20.7-24.2	Green-grey to red to mottled mudstone, massive, silty to sandy throughout.
24.2-30.5	Grey-brown to red-brown sandstone, fine- to medium-grained, poorly bedded to massive, minor carbonaceous matter. From 28.7-30.5 m approaching coarse grained with common small fragments of lag material and often quite limy. Quite competent throughout with very few fractures which are generally confined to bedding planes, very limy lag zone at 25-7-25.8 m.
30.5	End of hole.

Hole Number:	McK 86-02	Dip:	-90°
Location:	MacKenzie Quarry, Hardwood, Hill, Pictou County	Started:	17/11/86
Latitude:	45°39'36.27"	Completed:	20/11/86
3° MTM:	N 5058446 m	Ultimate Depth:	30.5 m
Longitude:	62° 50'3.33"	Proposed Depth:	30.5 m
3° MTM:	E 200820 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	118.94 m	Figure:	31, p. 57
Azimuth:	Not applicable		

Depth (m)	Description
0-0.6	Overburden.
0.6-5.5	Fine- to medium-grained, medium brown sandstone. Minor organic partings locally. Core angle to bedding 80°. Rock is blocky at 10-15 cm spacing.
5.5-8.5	As above, but tends to light grey to grey brown. Minor mudstone at 6.9-7.0 m. Rock jointed at 10-20 cm intervals.
8.5-9.9	Calcareous channel breccia. Rock is hard and joints at 15-30 cm intervals.
9.9-11.3	Grey-brown, medium grained sandstone, laminated and joints at 30-60 cm intervals.
11.3-15.0	Medium grained, massive brown sandstone, joints at 60 cm intervals.
15.0-15.3	Channel breccia, calcareous.
15.3-17.5	Mixed brown and grey, medium grained sandstone. Minor organic partings and mudstone bands.
17.5-17.6	Coal with pyrite.
17.6-18.1	Grey-brown, pebbly sandstone.
18.1-18.7	Dark blue-grey mudstone. Massive.
18.7-21.3	Grey-brown, massive, medium grained sandstone. Joints at 1 m intervals.
21.3-21.6	Channel breccia; calcareous.
21.6-22.9	Dark brown, fine- to medium-grained sandstone, blocky, joints at 1 m intervals.
22.9-28.3	Massive, grey-brown, fine- to medium-grained sandstone with organic partings at 27.4-28.3 m. Joints at 30-90 cm.
28.3-30.5	Dark brown mudstone under channel breccia at 28.3-28.4 m.
30.5	End of hole.

Hole Number:	McK 86-03	Dip:	-90°
Location:	MacKenzie Quarry, Hardwood, Hill, Pictou County	Started:	10/11/86
Latitude:	45°39'38.78"	Completed:	14/11/86
3° MTM:	N 5058523 m	Ultimate Depth:	30.5 m
Longitude:	62° 50'1.86"	Proposed Depth:	30.5 m
3° MTM:	E 200853 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	123.32 m	Figure:	31, p. 57
Azimuth:	Not applicable		

Depth (m)	Description
0-0.6	Overburden.
0.6-10.6	Medium grained, light tan to grey-tan sandstone. Very blocky to 3.0 m with joints at 2-5 cm intervals. After, joints at 60 cm-1 m intervals.
10.6-10.9	Calcareous channel breccia with blue-grey mudstone.
10.9-12.3	Medium grained, light grey-tan sandstone. Minor mudstone clasts and organic partings.
12.3-13.0	Calcareous channel breccia. Broken at 15-30 cm intervals.
13.0-14.3	Light grey-tan, medium grained sandstone with pebbly section at 13.4 m.
14.3-14.8	Channel breccia sandstone matrix, sandstone and mudstone clasts.
14.8-21.9	Medium grained, grey-tan to brownish-tan sandstone. Rock broken at 15-30 cm intervals.
21.9-22.3	Channel breccia.
22.3-25.0	Grey-tan, medium grained sandstone with pebbly unit at 23.9-24.1 m. Muddy partings at 24.7 m.
25.0-26.1	Medium grey, massive to laminated mudstone.
26.1-28.8	Light grey-tan, medium grained sandstone with muddy partings at 26.8 m. Rock broken at 30 cm intervals.
28.8-29.6	Calcareous channel breccia with mudstone fragments.
29.6-30.5	Medium- to coarse-grained, grey-tan sandstone channel breccia at 29.9 m.
30.5	End of hole.

HERITAGE MEMORIALS LTD. QUARRY, NICTAUX, ANNAPOLIS COUNTY

Hole Number:	NTX-89-01	Dip:	-90°
Location:	Heritage Memorials Ltd. Quarry, Nictaux, Annapolis County	Started:	22/02/89
Latitude:	*44°54'05"	Completed:	01/03/89
3° MTM:	*N 4973430 m	Ultimate Depth:	59.1 m
Longitude:	*65° 05'26"	Proposed Depth:	Not available
3° MTM:	*E 258170 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	*45.0 m	Figure:	10, p. 17
Azimuth:	Not applicable		

Depth (m)	Description
0-2.4	Overburden.
2.4-4.3	Medium grained, blue biotite granodiorite. Fractures at 3.4 m at 30° to core axis.
4.3-6.7	Grey to whitish biotite granodiorite. Aplite to fine grained granite dyke (5 cm) at 4.6 m. Sheared chlorite zone at 4.5 m. Strong fracturing at 40°-50°. Core axis at 15-30 cm intervals. Predominant joints at 5.0 m at 30° to core axis. Greenish alteration at 6.4-6.7 m associated with fracture at 30° to core axis.
6.7-11.9	Blue biotite granodiorite. Quartz streaks at 9.8 and 10.1 m.
11.9-12.2	Quartz veins (1 cm) at 11.9 m. Whitish alteration at 11.9-12.5 m. Joint at 12.0 m at 25° to core axis.
12.2-14.3	Blue biotite granodiorite.
14.3-16.5	Mixed whitish alteration, feldspar and quartz in veins and zones. Abundant fractures at 45°-0° to core axis.
16.5-20.4	Blue biotite granodiorite.
20.4-24.1	Mixed zone of whitish alteration and chlorite veins parallel to core axis at 21.9-23.5 m.
24.1-37.0	Blue, medium grained biotite granodiorite. Quartz-feldspar alteration at 25.8 m. Joint at 45° to core axis at 27.7 m. Xenolith at 29.6 m. Chlorite-muscovite veins and alteration at 32.0 m at 40° to core axis and at 32.3 m at 5° to core axis. Quartz, feldspar veins at 33.5 m and 33.8 m. Whitish alteration associated with veins.
37.0-59.1	Grey, medium grained biotite granodiorite. Vertical fracture parallel to core from 37.2-39.0 m. Minor sericite on crack. 3 mm quartz vein at 40.8 m. Xenoliths at 41.1 m and 41.6 m. Aplite dyke with silica-feldspar alteration at 41.9 m. Alteration extends over 30 cm width around 1 cm vein at 45° to core axis at 43.3 m. Three narrow (1 mm) veinlets at 45° to core axis at 44.8 m, 45.0 m and 45.1 m. Granite shows yellowish discoloration. Sericite fracture at 25° to core axis at 46.2 m. Aplite dyke (3 cm) at 49.1 m. Associated silica-feldspar alteration. Open sericite slips at 25° to core axis at 51.5 m and at 35° to core axis at 51.7 m. 5 mm sericite and quartz veinlet with biotite alteration at 20° to core axis at 53.0 m. Sericite veinlets at 45° to core axis at 53.9 m. Aplite veinlet and alteration at 55.2 m at 45° to core axis. Open joint. Fine grained biotite rich zone 55.8-56.1 m. Probable digested xenolith. Sericite joint at 35° to core axis at 56.5 m. Aplite dyke at 51.5-57.6 m at 35° to core axis. Open joint at 45° to core axis at 58.5 m. Sericite-chlorite-aplite dyke and veinlet at 58.8 m at 30° to core axis.
59.1	End of hole.

Hole Number: NTX-89-02
Location: Heritage Memorials Ltd. Quarry,
 Nictaux, Annapolis County
Latitude: *44°54'02"
3° MTM: *N 4973350 m
Longitude: *65° 05'27"
3° MTM: *E 258145 m
Datum: Mean sea level
Elevation: *53.0 m
Azimuth: Not applicable

Dip: -90°
Started: 06/03/89
Completed: 14/03/89
Ultimate Depth: 28.7 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figure: 10, p. 17

Depth (m) Description

0-28.7 Medium grained, grey to blue-grey biotite granodiorite. Joints at 80° to core axis at 30 cm and 60 cm. Vertical fracture kaolinized at 1.5 m. Sericite-quartz veinlet (1 mm) at 3.7 m. Whitish alteration over 15 cm around veinlet. Joint at 60° to core axis at 4.0 m and 4.3 m. Xenolith at 4.6 m. Joint at 80° to core axis at 7.5 m. Joint at 80° to core axis at 9.1 m. Fracture parallel to core axis at 9.3-9.6 m. Whitish alteration and joint at 9.8 m. Fracture parallel to core axis at 10.7-11.3 m. Solid core at 11.6-12.8 m. Fracture parallel to core axis at 12.8-13.7 m. Quartz vein at 20° to core axis at 13.4 m. Whitish alteration and broken rock at 13.4-15.2 m. Joint at 80° to core axis at 16.6 m. Fracture at 10° to core axis at 17.1-17.4 m. Fracture at 5° to core axis at 17.7-18.1 m. Joint with whitish alteration at 19.5 m. Joint at 80° to core axis. Joint at 75° to core axis at 21.6 m. Joint at 25° to core axis at 22.6 m. Joint at 30° to core axis at 22.9 m. Fracture parallel to core axis at 22.9 m. Joint at 80° to core axis at 23.1 m. Joint at 35° to core axis at 23.5 m. Sericite-quartz-chlorite veinlet (1 mm) parallel to core axis from 23.2-23.5 m. Quartz vein (1 cm) parallel to core axis at 24.1 m. Joint at 85° to core axis at 26.5 m and 28.3 m.

28.7 End of hole.

Hole Number: NTX-89-03
Location: Heritage Memorials Ltd. Quarry,,
 Nictaux, Annapolis County
Latitude: *44°53'59"
3° MTM: *N 4973250 m
Longitude: *65° 05'32"
3° MTM: *E 258030 m
Datum: Mean sea level
Elevation: *56.0 m
Azimuth: Not applicable

Dip: -90°
Started: 15/03/89
Completed: 20/03/89
Ultimate Depth: 29.0 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figure: 10, p. 17

Depth (m)	Description
0-1.8	Overburden.
1.8-29.0	Medium grained, blue-grey granodiorite. Sericite-quartz veins at 45° to core axis at 3.7 m. Whitish alteration. Joint at 45° to core axis at 4.9 m. Possible joint at 80° to core axis at 6.7 m. Kaolinized joint at 35° to core axis at 7.5 m and 7.6 m. Joint at 40° to core axis at 9.0 m. Joint at 45° to core axis at 13.4 m with quartz sericite veinlet. Joint at 45° to core axis at 13.9 m. Sericite, kaolinized joint at 35° to core axis at 14.3 m. Joint at 45° to core axis at 18.1 m. Broken zone at 18.4 m at 25° to core axis. Quartz-aplitic altered zone and veins at 20° to core axis and at 80° to core axis at 20.1-20.4 m. Kaolinized joint at 70° to core axis at 20.4 m. Fracture at 20° to core axis at 20.7-21.0 m. Aplite dyke (2 cm) at 21.6 m. Whitish altered joint at 85° to core axis at 26.7 m.
29.0	End of hole.

SAWMILL BROOK QUARRY, LYONS BROOK, PICTOU COUNTY

Hole Number:	SMB-86-01	Dip:	-90°
Location:	Sawmill Brook Quarry, Lyons Brook, Pictou County	Started:	06/03/86
Latitude:	45°39'48.99"	Completed:	11/03/86
3° MTM:	N 5058797 m	Ultimate Depth:	47.9 m
Longitude:	62° 48'4.36"	Proposed Depth:	Not available
3° MTM:	E 203402 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	19.90 m	Figure:	36, p. 64
Azimuth:	Not applicable		

Depth (m)	Description
0-3.5	Overburden.
3.5-5.5	Olive green to grey, medium grained sandstone. Blocky with joints at 5-10 cm intervals at 75° to core axis.
5.5-6.1	Grey mudstone breccia with dark grey shale fragments. Minor organic matter in thin bands.
6.1-7.5	Red-brown clay (plastic).
7.5-7.8	Red-brown mudstone.
7.8-8.5	Red-brown mudstone.
8.5-8.8	Red-grey, fine sandstone.
8.8-12.2	Red-brown mudstone, blocky with joints at 5-10 cm intervals.
12.2-13.4	Brownish-grey, fine sandstone. Joints at 10-15 cm intervals.
13.4-14.3	Red-brown mudstone.
14.3-19.5	Red-brown, fine- to medium-grained sandstone. Joints at 60 cm-1 m intervals. Finely laminated with beds at 80°-90° to core axis.
19.5-21.0	Red-brown, fine- to medium-grained sandstone becomes coarser downhole.
21.0-21.2	Grey, fine grained breccia or conglomerate. Fine grained, grey shale fragments.
21.2-21.6	Grey to brownish-grey, finely laminated, medium- to fine-grained sandstone.
21.6-21.8	Light grey, shaly breccia.
21.8-25.0	Red-brown, fine- to medium-grained siltstone with laminations at 80°-90° to core axis. Becomes more grey downhole.
25.0-27.1	Medium grey, medium grained sandstone. Massive unit with 3.2 m unbroken core. Minor bedding at 75° to core axis, terminates in 2 m shale horizon.
27.1-28.0	Grey, mixed breccia, shale and siltstone.
28.0-34.4	Red-brown mudstone. Closely jointed at 6-12 cm intervals.
34.4-46.6	Red-brown mudstone with minor silty units. Finely laminated at 75°-85° to core axis. Lighter red-grey unit at 38.7-41.1 m. Rock very blocky.

Depth (m)	Description
46.6-47.9	Red-brown mudstone to siltstone with grey chips and fragments. Bedding at 75° to core axis. Joints at 40-60 cm intervals.
47.9	End of hole.

Hole Number:	SMB-86-02	Dip:	-90°
Location:	Sawmill Brook Quarry, Lyons Brook, Pictou County	Started:	12/03/86
Latitude:	45°39'48.03"	Completed:	14/03/86
3° MTM:	N 5058768 m	Ultimate Depth:	47.9 m
Longitude:	62° 48'5.55"	Proposed Depth:	Not available
3° MTM:	E 203376 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	22.19 m	Figure:	36, p. 64
Azimuth	Not applicable		

Depth (m)	Description
0-5.2	Overburden.
5.2-7.3	Red-brown mudstone, very blocky and broken. Mostly fragmented.
7.3-8.8	Red-brown siltstone. Joints at 60 cm-1 m intervals.
8.8-10.7	Red-brown mudstone-shale. High clay content. Finely laminated and expanded.
10.7-13.6	Red-brown siltstone and sandstone. Joints at 10-15 cm intervals.
13.6-17.7	Red-brown to greyish-brown siltstone. Locally, finely laminated at 80° to core axis. Minor mottling and 5-7 cm bands of green siltstone.
17.7-18.0	Mottled dark grey and green mudstone.
18.0-18.9	Brownish-grey, medium grained siltstone. Finely laminated at 80° to core axis. Minor organic partings. Jointed at 30 cm intervals.
18.9-20.0	Red-brown, finely laminated, fine grained siltstone. Joints at 30-60 cm intervals.
20.0-25.0	Brownish-grey to grey, fine- to medium-grained siltstone. Finely laminated. Joints at 60 cm-1 m intervals. Fairly consistent grain size.
25.0-25.8	Mixed, dark grey and light grey siltstone and mudstone breccia. Dark grey, ripup clasts of mudstone in fine grained, light grey siltstone matrix.
25.8-26.2	Light grey, medium grained siltstone with minor organic partings. Bedding at 75°-80° to core axis.
26.2-35.1	Intercalated, red-brown mudstone and siltstone. Siltstone jointed at 30-40 cm intervals. Mudstone jointed at 10-15 cm intervals.
35.1-45.4	Mixed, red-brown mudstone and siltstone. Rock jointed at 60 cm-1 m intervals. At 44.5-45.4 m reddish mud chips up to 15-25 cm in diameter.

Depth (m)	Description
45.4-47.9	Brown, finely laminated, massive siltstone. Minor mottled grey and green. Beds at 75°-80° to core axis. Joints at 60 cm-1 m intervals.
47.9	End of hole.

Hole Number:	SMB-86-03	Dip:	-90°
Location:	Sawmill Brook Quarry, Lyons Brook, Pictou County	Started:	17/03/86
Latitude:	45°39'48.79"	Completed:	20/03/86
3° MTM:	N 5058791 m	Ultimate Depth:	38.7 m
Longitude:	62° 48'5.56"	Proposed Depth:	Not available
3° MTM:	E 203376 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	19.88 m	Figure:	36, p. 64
Azimuth	Not applicable		

Depth (m)	Description
0-4.3	Overburden.
4.3-6.4	Brown-red siltstone. Joints at 20-30 cm intervals. Faint bedding at 80° to core axis.
6.4-12.5	Fine- to medium-grained, brownish-red sandstone becomes more brown grey downhole. One joint between 8.2 m and 9.8 m. Rest jointed at 15-60 cm intervals. Sandstone is finely laminated locally with bedding at 80° -90° to core axis. Bedding in channel at 11.9 m at 62 ° to core axis. Minor shale fragments at 9.7-11.3 m.
12.5-13.8	Brownish-grey, medium grained, massive sandstone; not jointed. Minor organic partings at 13 m. Bedding at 80° to core axis.
13.8-13.9	Mudstone fragments up to 60 cm in grey sandstone matrix.
13.9-14.6	Grey-brown, medium grained sandstone. Minor organic partings at 80° to core axis.
14.6-15.8	Mixed light grey, medium grained sandstone and channel breccia. Fragments up to 6 cm common. Organic partings common.
15.8-17.4	Grey-brown, medium grained, massive sandstone with minor organic partings. Faint bedding at 80° to core axis. Solid core from 16.5-17.4 m, no joints.
17.4-18.3	Mottled red-brown and blue-grey mudstone, siltstone and breccia. Jointed at 15 cm intervals.
18.3-19.2	Grey-brown, medium sandstone and minor mudstone breccia at 18.9 m.
19.2-19.5	Red-brown clay and mudstone. Blocky and expanded.
19.5-25.6	Mixed red-brown mudstone and siltstone. Blocky with joints at 10-15 cm intervals.
25.6-25.9	Red-brown mudstone with ripup clasts.
25.9-31.1	Mixed red-brown siltstone and mudstone with abundant grey-green fragments. (Most less than 2 mm in diameter.)

Depth (m)	Description
31.1-32.3	Brown-grey, fine- to medium-grained sandstone grades into siltstone and mudstone to 32.3 m.
32.3-34.1	Mainly red-brown siltstone and mudstone. Joints at 10-20 cm intervals.
34.1-38.4	Red-brown mudstone and minor siltstone, very blocky with joints at 5-10 cm intervals.
38.4-38.7	Red-brown siltstone with calcareous nodules(?) and fossils(?). Finely laminated at 75° to core axis.
38.7	End of hole.

Hole Number: SMB-86-04
Location: Sawmill Brook Quarry,
 Lyons Brook, Pictou County
Latitude: *45°39'48"
3° MTM: *N 5058760 m
Longitude: *62° 48'04"
3° MTM: *E 203414 m
Datum: Mean sea level
Elevation: *8.92 m
Azimuth: Not applicable

Dip: -90°
Started: 23/06/86
Completed: 25/06/86
Ultimate Depth: 26.5 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figure: 36, p. 64

Depth (m)	Description
0-2.1	Overburden and stone blocks.
2.1-5.8	Medium grey, medium grained, limy sandstone with organic partings near top.
5.8-11.9	Red-brown, very limy mudstone (in top 15 cm) with abundant calcareous concretions at 7.3-8.2 m.
11.9-16.8	Finely laminated, medium brown siltstone and fine grained sandstone.
16.8-17.4	Calcareous, grey, channel breccia.
17.4-18.9	Light to medium grey, medium grained sandstone. Locally mottled. Joints at 30 cm intervals.
18.9-21.3	Light brown to pinkish, finely laminated, fine grained sandstone. Joints at 60 cm intervals.
21.3-25.9	Grey, massive sandstone. Locally laminated. Joints at 60 cm-1 m intervals.
25.9-26.5	Red-brown mudstone.
26.5	End of hole.

Hole Number: SMB-86-05
Location: Sawmill Brook Quarry,
 Lyons Brook, Pictou County
Latitude: 45°39'50.05"
3° MTM: N 5058830 m
Longitude: 62° 48'5.87"
3° MTM: E 203370 m
Datum: Mean sea level
Elevation: 21.88 m
Azimuth: Not applicable

Dip: -90°
Started: 28/07/86
Completed: 28/07/86
Ultimate Depth: 13.7 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figure: 36, p. 64

Depth (m)	Description
0-3.0	Overburden.
3.0-3.4	Brown, fine grained sandstone. Massive not laminated. Blocky and broken at 10-15 cm intervals.
3.4-3.5	Light grey, limy zone, laminated.
3.5-5.8	Brown, fine- to medium-grained sandstone. Increasing lamination downhole. Blocky and broken at 10-20 cm intervals.
5.8-7.1	Mainly grey-brown, locally calcareous sandstone. Fine grained with narrow grey, calcareous beds.
7.1-7.2	Calcareous mudstone.
72.-7.3	Brown sandstone, massive, fine grained.
7.3-10.7	Grey-brown and grey laminated, calcareous sandstone. Locally mud chips and massive units. Joints at 30 cm intervals.
10.7-11.0	Limy mudstone and mud chip channel breccia. Calcareous.
11.0-13.7	Brown, slightly mottled siltstone and mudstone, locally calcareous bands. Blocky, with joints at 15 cm intervals.
13.7	End of hole.

Hole Number: SMB-86-06
Location: Sawmill Brook Quarry
 Lyons Brook, Pictou County
Latitude: 45°39'49.56"
3° MTM: N 5058815 m
Longitude: 62° 48'5.16"
3° MTM: E 203385 m
Datum: Mean sea level
Elevation: 21.8 m
Azimuth: Not applicable

Dip: -90°
Started: 28/06/86
Completed: 28/06/86
Ultimate Depth: 17.8 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figure: 36, p. 64

Depth (m)	Description
0-4.9	Overburden.
4.9-6.4	Red-brown siltstone.
6.4-9.8	Red-brown sandstone.
9.8-11.01	Red-brown and minor grey sandstone.
11.0-11.1	Channel breccia.
11.1-14.0	Grey-brown to grey, fine- to medium-grained sandstone.
14.0-17.7	Grey, laminated sandstone.
17.7-17.8	Channel breccia, red mudstone.
17.8	End of hole.

SOUTH RIVER LAKE QUARRY, ANTIGONISH COUNTY

Hole Number:	SRL-89-01	Dip:	-90°
Location:	South River Lake Quarry, Antigonish County	Started:	31/01/89
Latitude:	*45°24'60"	Completed:	14/02/89
3° MTM:	*N 5030623 m	Ultimate Depth:	59.1 m
Longitude:	*61° 56'14"	Proposed Depth:	Not available
3° MTM:	*E 270575 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	*72.0 m	Figure:	4, p. 10
Azimuth:	Not applicable		

Depth (m)	Description
0-5.2	Overburden, sand and gabbro boulders.
5.2-59.1	Fine- to medium-grained, dark grey to black gabbro. Highly fractured with joints at 20°-45° to core axis. Longest piece of core is 20 cm. Abundant green serpentine veins throughout up to 5 mm wide. Alteration of gabbro along vein margins consists of serpentinized feldspars and olivine(?) now chloritized. Wider serpentine veins at 16.4 m, 17.4 m, 19.8 m, 25 m, 26.8 m, 27.7 m, 28.7 m, 29 m, 31.7 m, 32.6 m, 36.6 m, 41.8 m, 42.7 m, 43.3 m, 44.5 m and 44.8 m. Vein at 36.6 m is 10 cm wide with wall alteration up to 10 cm on either side. Veins at 20.4 m and 21.0 m contain brecciated calcite cores bounded by serpentine. Pyrrhotite common in blebs and crystal blobs up to 1 mm. At 26.8 m serpentine core is brecciated and surrounded by calcite.
59.1	End of hole.

ROBERT BALTZER QUARRY, SOUTH WILLIAMSTON, ANNAPOLIS COUNTY

Hole Number:	SWN-89-01	Dip:	-90°
Location:	Robert Baltzer Quarry, South Williamston, Annapolis County	Started:	24/03/89
Latitude:	*44°53'49"	Completed:	30/03/89
3° MTM:	*N 4972955 m	Ultimate Depth:	26.4 m
Longitude:	*65° 06'22"	Proposed Depth:	30.5 m
3° MTM:	*E 256932 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	*42.5 m	Figure:	11, p. 19
Azimuth:	Not applicable		

Depth (m)	Description
0-0.9	Overburden.
0.9-26.4	Fine- to medium-grained, blue-grey biotite-granodiorite. Minor xenoliths, quartz veins, chlorite-sericite and hematite slips and shears. Aplite dykes. Joints at: 1.1 m at 40° to core axis; 2.0 m at 45° to core axis; 2.4 m at 45° to core axis; 2.7 m at 90° to core axis; 3.4 m at 65° to core axis; 3.7 m at 45° to core axis; 5.2-5.8 m at 0° to core axis; 6.2 m at 45° to core axis; quartz sericite vein at 9.4 m at 45° to core axis; joints at: 11.9 m at 45° to core axis; 12.2 m at 45° to core axis; 1 cm quartz-sericite vein at 45° to core axis at 13.6 m; joint at 13.7 m at 80° to core axis; quartz-sericite veins at 14.3 m at 45° to core axis and 14.9 m at 30° to core axis; joints at: 15.2 m at 50° to core axis; 15.5 m at 50° to core axis; 18.3 m at 10° to core axis; 19.1 m at 45° to core axis; 19.8 m at 20° to core axis; 20.1 m at 50° to core axis; 20.4 m at 30° to core axis; 20.7 m at 40° to core axis; 21.3 m at 45° and 15° to core axis. 21.3-23.2 m broken rock, abundant quartz-chlorite-sericite-hematite alteration around aplite dykes and veins. 24.1-26.4 m joint at 20 cm intervals at 40°-50° to core axis. Note: Granite from 1.8-13.7 m is the most consistent and free of alteration.
26.4	End of hole.

Hole Number:	SWN-89-02	Dip:	-90°
Location:	Robert Baltzer Quarry, South Williamston, Annapolis County	Started:	03/04/89
Latitude:	*44°53'50"	Completed:	04/04/89
3° MTM:	*N 4972990 m	Ultimate Depth:	19.8 m
Longitude:	*65° 06'24"	Proposed Depth:	30.5 m
3° MTM:	*E 256882 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	*40.7 m	Figure:	11, p. 19
Azimuth:	Not applicable		

Depth (m)	Description
0-2.7	Overburden.
2.7-8.5	Strong chlorite-hematite-sericite alteration along veins and shears at 0°-25° to core axis. Host rock is fine- to medium-grained biotite granodiorite. Rock is extremely blocky and fractured and broken. Over 50% strongly altered. Remainder, bleached or pale, altered to greenish.
8.5-19.8	Slightly to moderately altered biotite granodiorite. Abundant hematite and chlorite and sericite alteration along fractures and veins. Most veins cut core at 35° -40°. At least one joint per 20 cm and sometimes more.
19.8	End of hole.

Hole Number:	SWN-89-03	Dip:	-90°
Location:	Robert Baltzer Quarry, South Williamston, Annapolis County	Started:	05/04/89
Latitude:	*44°53'49"	Completed:	06/04/89
3° MTM:	*N 4972960 m	Ultimate Depth:	15.8 m
Longitude:	*65° 06'23"	Proposed Depth:	Not available
3° MTM:	*E 256910 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	*42.6 m	Figure:	11, p. 19
Azimuth	Not applicable		

Depth (m)	Description
0-0.6	Overburden.
0.6-15.8	Fine- to medium-grained, blue-grey biotite granodiorite. 5.6-6.1 m kaolin, hematite alteration along vertical to 30° fractures. 8.1 m quartz-feldspar vein and associated whitish alteration within 20 cm of the vein. Minor sericite on fractures locally. 12.2 m quartz-feldspar vein. 14.2 m quartz-feldspar vein with sericite. 14.9 m fine grained diorite dyke at 40° to core axis. Associated sericite on crescent shaped fracture below the vein. Joints at: 1.2 m at 80° to core axis; 1.8 m at 30° to core axis; 4.6 m at 90° to core axis; 5.6 m at 30° to core axis; 5.9 m at 20° to core axis; 7.8 m at 30° to core axis; 9.8 m at 40° to core axis; 10.1 m at 50° to core axis; 10.7 m at 30° to core axis; 11.0 m at 40° to core axis; 11.3 m at 20° to core axis; 11.9 m at 35° to core axis; 13.4 m at 10° to core axis; 13.9 m at 60° to core axis; 14.2 m at 65° to core axis; 14.9 m at 0° to core axis.
15.8	End of hole.

CROWS NEST, TERENCE BAY, HALIFAX COUNTY

Hole Number:	TB-87-01	Dip:	-90°
Location:	Crows Nest, Terence Bay, Halifax County	Started:	09/03/87
Latitude:	44°28'26.32"	Completed:	19/03/87
3° MTM:	N 4926087 m	Ultimate Depth:	56.69 m
Longitude:	63° 42'21.06"	Proposed Depth:	Not available
3° MTM:	E 367982 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	33.52 m	Figures:	22a, p. 40; 22d, p. 44
Azimuth:	Not applicable		

Depth (m)	Description
0.56.69	Coarse grained, porphyritic monzogranite. Some feldspar laths up to 3 cm long and 1 cm wide. Composition: 28% quartz; 55% feldspar (microcline); 4% feldspar (plagioclase); 7% biotite; 6% cordierite. Biotite cluster at 20.39 m, 5 cm long composed of 60% cordierite after biotite and 30% biotite. Joints at: 76 cm at 37°, minor kaolin and staining; 3.96 m at 55°, sericite and biotite staining; 6.95 m at 60°, sericite with brown stain; 12.31 m at 25°, minor sericite with limonite stain; 24.99 m at 40°, minor sericite-chlorite; 38.10 m ground core, possibly joint; 43.49 m at 60°, sericite with biotite staining; 51.21 m at 60°, sericite, biotite stained; and 55.02 m at 60°, sericite common across entire joint surface. Biotite cluster at 28.96 m is 22 cm long 50% mafics (30% cordierite?, 20% fresh biotite) and 50% bluish quartz. Biotite cluster at 50.17 m about 10 cm long, mafic content 20%, quartz 40%, feldspar 40%. Over interval 30.48-56.69 m higher proportion of altered biotite blebs. Some up to 1 cm in size..
56.69	End of hole.

Hole Number:	TB-87-02	Dip:	-90°
Location:	Crows Nest, Terence Bay, Halifax County	Started:	24/03/87
Latitude:	44°28'25.43"	Completed:	25/03/87
3° MTM:	N 4926059 m	Ultimate Depth:	30.48 m
Longitude:	63° 42'22.24"	Proposed Depth:	30.48 m
3° MTM:	E 367956 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	31.3 m	Figures:	22a, p. 40; 22d, p. 44
Azimuth:	Not applicable		

Depth (m)	Description
0.30.48	Coarse grained, porphyritic monzogranite with white microcline phenocrysts up to 3 cm in length. Rock contains 55% potash feldspar, 4% plagioclase, 13% biotite and cordierite, 28% quartz. Biotite occurs in clusters of grains and cordierite is dull black to brown in clumps. Joints at: 3.51 m at 70° to core axis; 6.10 m at 80° to core axis; 7.01 m at 50° to core axis; 10.67 m at 45° to core axis; 12.19 m at 45° to core axis; 13.11 m at 45° to core axis; 16.46 m at 45° to core axis; and 18.59 m at 45° to core axis.

Depth (m)	Description
30.48	End of hole.

Hole Number:	TB-87-03
Location:	Crows Nest, Terence Bay, Halifax County
Latitude:	44°28'25.33"
3° MTM:	N 4926056 m
Longitude:	63° 42'21.29"
3° MTM:	E 367977 m
Datum:	Mean sea level
Elevation:	30.14 m
Azimuth	Not applicable

Dip:	-90°
Started:	26/03/87
Completed:	09/04/87
Ultimate Depth:	30.48 m
Proposed Depth:	30.48 m
Drilled by:	Nova Scotia Department of Mines and Energy
Geologist:	G. Dickie
Figures:	22a, p. 40; 22d, p. 44

Depth (m)	Description
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0-30.48	Coarse grained, porphyritic monzogranite with white feldspar phenocrysts up to 3 cm in length. Rock contains 5% biotite, 5% cordierite. Biotite occurs as clusters and grains and cordierite occurs in dull black to brown clumps. Quartz is grey and up to 25% .Minor amounts of chalky feldspar as zoned grains up to 5 mm in size. Xenolith at 21 m, quartz vein at 80° to core axis at 18.29 m depth. Joint surfaces kaolinized with some sericite alteration. Joints at: 91 cm at 40° to core axis; 1.22 m at 45° to core axis; 5.49 m at 55° to core axis; 11.28 m at 80° to core axis; 14.63 m at 70° to core axis; 16.00 m at 30° to core axis; 16.46 m at 40° to core axis; 17.53 m at 30° to core axis; and 20.12 m at 80° to core axis.
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30.48	End of hole.
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QUARRY LAKE GRANITE QUARRY, TERENCE BAY, HALIFAX COUNTY

Hole Number:	TB-87-04
Location:	Quarry Lake Granite Quarry, Terence Bay, Halifax County
Latitude:	44°29'14.22"
3° MTM:	N 4927555 m
Longitude:	63° 43'7.16"
3° MTM:	E 366949 m
Datum:	Mean sea level
Elevation:	26.36 m
Azimuth	Not applicable

Dip:	-90°
Started:	13/04/87
Completed:	14/04/87
Ultimate Depth:	30.48 m
Proposed Depth:	30.48 m
Drilled by:	Nova Scotia Department of Mines and Energy
Geologist:	G. Dickie
Figures:	22a, p. 40; 22c, p. 43

Depth (m)	Description
0-30.48	Coarse grained, porphyritic biotite monzogranite; biotite and cordierite content up to 10%. Biotite present as shiny black crystals, clusters and individual grains. Cordierite occurs as dull black clots of fine needles. Feldspar content up to 60%; some occur as larger prisms up to 3 cm in length with minor biotite inclusions common. Quartz content up to 25% as grey milky clusters. Chalky feldspar grains up to 5 mm in diameter common on quartz-feldspar grain boundaries. Kaolinization along joints common. Joints at: 2.10 m at 35° to core axis; 91 cm at 40° to core axis; 4.72 m at 45° to core axis; 5.18 m at 35° to core axis; 5.79 m at 45° to core axis; 7.01 m at 40° to core axis; and 13.41 m at 80° to core axis.
30.48	End of hole.

Hole Number:	TB-87-05	Dip:	-90°
Location:	Quarry Lake Granite, Quarry Terence Bay, Halifax County	Started:	15/04/87
Latitude:	44°29'13.32"	Completed:	15/04/87
3° MTM:	N 4927527 m	Ultimate Depth:	30.48 m
Longitude:	63° 43'6.53"	Proposed Depth:	30.48 m
3° MTM:	E 366963 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	27.37 m	Figures:	22a, p. 40; 22c, p. 43
Azimuth	Not applicable		

Depth (m)	Description
0-30.48	Coarse grained biotite monzogranite. Composition: 5-10% biotite and cordierite; 20% milky to grey quartz; 7% kaolinized K-feldspar; 58% white porphyritic feldspar. Microcline in rectangular zoned crystals up to 5 mm in size. Joints are kaolinized up to 3 cm on either side at: 2.13 m at 45° to core axis; 2.29 m at 45° to core axis; 5.33 m at 45° to core axis; 6.25 m at 45° to core axis; 7.62 m at 90° to core axis; 7.77 m at 60° to core axis; 17.37 m at 40° to core axis; 20.97 m at 85° to core axis
30.48	End of hole.

Hole Number:	TB-87-06	Dip:	-90°
Location:	Quarry Lake Granite Quarry, Terence Bay, Halifax County	Started:	21/04/87
Latitude:	44°29'12.81"	Completed:	22/04/87
3° MTM:	N 4927512 m	Ultimate Depth:	30.48 m
Longitude:	63° 43'7.20"	Proposed Depth:	30.48 m
3° MTM:	E 366949 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	25.99 m	Figures:	22a, p. 40; 22c, p. 43
Azimuth	Not applicable		

Depth (m)	Description
0-30.48	Coarse grained, grey monzogranite with 65% feldspar, 25% quartz, 10% biotite and cordierite. Joints at: 2.65 m at 80° to core axis; 3.35 m at 90° to core axis; 3.96 m at 85° to core axis; 9.88 m at 45° to core axis; 15.54 m at 30° to core axis; 17.68 m at 80° to core axis; 21.95 m at 45° to core axis; and 22.62 m at 80° to core axis. Limonite alteration along joints to 9.75 m. Minor xenoliths at 14.48 m, and 21.34 m. Quartz, feldspar dyke at 21.95-22.19 m with tourmaline(?) on upper boundary.
30.48	End of hole.

Hole Number:	TB-87-07	Dip:	-90°
Location:	Quarry Lake Granite Quarry, Terence Bay, Halifax County	Started:	23/04/87
Latitude:	44°29'12.87"	Completed:	27/04/87
3° MTM:	N 4927513 m	Ultimate Depth:	30.48 m
Longitude:	63° 43'8.05"	Proposed Depth:	30.48 m
3° MTM:	E 366930 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	28.13 m	Figures:	22a, p. 40; 22c, p. 43
Azimuth	Not applicable		

Depth (m)	Description
0-30.48	Coarse grained, grey monzogranite with 65% feldspar, 25% quartz, 10% biotite and cordierite. Biotite and cordierite as individual crystals up to 2-3 mm random distribution. Also clusters and blebs up to 1 cm in diameter. Joints at: 1.22 m at 40° to core axis; 2.13 m at 40° to core axis; 4.27 m at 90° to core axis; 5.03 m at 90° to core axis; 9.20 m at 95° to core axis; 12.50 m at 45° to core axis; 14.78 m at 90° to core axis; 16.52 m at 75° to core axis; 16.67 at 75° to core axis; 16.92 m at 75° to core axis; 18.50 m at 70° to core axis; 19.51 m at 55° to core axis; and 27.13 at 85° to core axis. Major joints show limonite alteration, kaolinization up to 30 cm on either side.
30.48	End of hole.

LITTLE LAKE OCCURRENCE, TERENCE BAY, HALIFAX COUNTY

Hole Number:	TB-87-08	Dip:	-90°
Location:	Little Lake Occurrence, Terence Bay, Halifax County	Started:	29/04/87
Latitude:	44°29'36.42"	Completed:	30/04/87
3° MTM:	N 4928238 m	Ultimate Depth:	14.33 m
Longitude:	63° 43'17.55"	Proposed Depth:	14.33 m
3° MTM:	E 366713 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	29.38 m	Figures:	22a, p. 40; 22b, p. 41
Azimuth	Not applicable		

Depth (m)	Description
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0-14.33	Coarse grained, grey monzogranite with 70% feldspar, 20% quartz, 10% biotite and cordierite. Joints at: 5.27 m at 90° to core axis and 5.64 m at 90° to core axis. Slate xenolith at 7.16 m. Minor biotite knot at 9.30 m.
14.33	End of hole.

Hole Number:	TB-87-09
Location:	Little Lake Occurrence, Terence Bay, Halifax County
Latitude:	44°29'37.32"
3° MTM:	N 4928266 m
Longitude:	63° 43'19.02"
3° MTM:	E 366680 m
Datum:	Mean sea level
Elevation:	31.86 m
Azimuth	Not applicable

Dip:	-90°
Started:	04/05/87
Completed:	04/05/87
Ultimate Depth:	14.33 m
Proposed Depth:	14.33 m
Drilled by:	Nova Scotia Department of Mines and Energy
Geologist:	G. Dickie
Figures:	22a, p. 40; 22b, p. 41

Depth (m)	Description
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0-14.33	Coarse grained, grey monzogranite with 70% feldspar, 25% quartz and 5% biotite. Fairly uniform texture and grain size. Xenolith 3 cm at 2.90 m. Joints at: 3.81 m at 75° to core axis; 5.18 m at 90° to core axis; 7.47 m at 70° to core axis; 9.14 m at 90° to core axis; 10.21 m at 80° to core axis. Aplite or fine grained porphyry dyke at 5.79-6.10 m. Upper contact at 45° to core axis. Porphyry dyke at 9.91-10.06 m.
14.33	End of hole.

Hole Number:	TB-87-10
Location:	Little Lake Occurrence, Terence Bay, Halifax County
Latitude:	44°29'38.06"
3° MTM:	N 4928288 m
Longitude:	63° 43'19.62"
3° MTM:	E 366667 m
Datum:	Mean sea level
Elevation:	30.99 m
Azimuth	Not applicable

Dip:	-90°
Started:	04/05/87
Completed:	04/05/87
Ultimate Depth:	14.33 m
Proposed Depth:	14.33 m
Drilled by:	Nova Scotia Department of Mines and Energy
Geologist:	G. Dickie
Figures:	22a, p. 40; 22b, p. 41

Depth (m)	Description
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0-14.33	Coarse grained, grey monzogranite with 70% feldspar, 25% quartz, and 5% biotite and cordierite. Joints at: 0 m at 5° to core axis, major; 6.10 m at 5° to core axis, major; 7.92 m at 80° to core axis, major; and 14.17 m at 80° to core axis, major. Aplite dyke at 5.94-6.40 m at 90° to core axis with kaolin alteration from 5.64-6.71 m.
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Depth (m)	Description
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14.33	End of hole.
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Hole Number: TB-87-11
Location: Little Lake Occurrence, Terence Bay, Halifax County
Latitude: 44°29'38.80"
3° MTM: N 4928311 m
Longitude: 63° 43'20.24"
3° MTM: E 366653 m
Datum: Mean sea level
Elevation: 29.28 m
Azimuth: Not applicable

Dip: -90°
Started: 05/05/87
Completed: 06/05/87
Ultimate Depth: 14.02 m
Proposed Depth: 14.33 m
Drilled by: Nova Scotia Department of Mines and Energy
Geologist: G. Dickie
Figures: 22a, p. 40; 22b, p. 41

Depth (m)	Description
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0-14.02	Coarse grained, grey monzogranite with 65% feldspar, 30% quartz, and 5% biotite and cordierite. Joints at: 76 cm at 85° to core axis; 91 cm at 10° to core axis, major; 3.96 m at 30° to core axis, major; 4.27 m at 90° to core axis, major; 5.03 m at 80° to core axis, major; 12.80 m at 30° to core axis, major; and 13.11 m at 70° to core axis, major. Kaolin alteration within 30-60 cm of major joint sets. Biotite knots at 1.52-1.71 m and 2.44-2.74 m.
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14.02	End of hole.
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Hole Number: TB-87-12
Location: Little Lake Occurrence, Terence Bay, Halifax County
Latitude: 44°29'37.95"
3° MTM: N 4928285 m
Longitude: 63° 43'20.64"
3° MTM: E 366644 m
Datum: Mean sea level
Elevation: 29.41 m
Azimuth: Not applicable

Dip: -90°
Started: 06/05/87
Completed: 06/05/87
Ultimate Depth: 14.33 m
Proposed Depth: 14.33 m
Drilled by: Nova Scotia Department of Mines and Energy
Geologist: G. Dickie
Figures: 22a, p. 40; 22b, p. 41

Depth (m)	Description
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0-14.33	Coarse grained, grey monzogranite with 75% megacrystic feldspar, 20% quartz, and 5% biotite and cordierite. Joints at: 2.13 m at 45° to core axis; 2.19 m at 45° to core axis; 12.71 m at 90° to core axis, minor; 12.77 m at 90° to core axis, minor; 13.72 m at 90° to core axis, minor. Biotite rich zone at 10.97 m. Aplite dyke at 13.87-14.02 m at 90° to core axis. Minor alteration of feldspar to buff colour 0-0.61 m and adjacent to aplite dyke. Granite is uniform in colour where unaltered.
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14.33	End of hole.
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WALLACE QUARRIES LTD. QUARRY, WALLACE, CUMBERLAND COUNTY

Hole Number:	WAL-86-01	Dip:	-90°
Location:	Wallace Quarries Ltd. Quarry, Wallace, Cumberland County	Started:	06/10/86
Latitude:	45°48'31.40"	Completed:	08/10/86
3° MTM:	N 5074620 m	Ultimate Depth:	37.2 m
Longitude:	63° 27'57.23"	Proposed Depth:	Not available
3° MTM:	E 385175 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	29.83 m	Figures:	44, p. 78; 45, p. 80
Azimuth:	Not applicable		

Depth (m)	Description
0-5.2	Overburden.
5.2-5.5	Green, medium grained sandstone with organic partings.
5.5-7.3	Lost Core.
7.3-7.9	Green, blue-grey, medium grained sandstone with coaly partings at 7.9 m.
7.9-9.0	Blue-grey, medium grained sandstone, minor organic partings. Coaly band 5 mm thick at 8.9 m.
9.0-9.2	Blue-grey siltstone-mudstone.
9.2-9.5	Blue-grey, whitish-grey, channel breccia, sandstone-siltstone.
9.5-10.2	Light to medium grey, medium grained sandstone. Minor partings at 9.5-9.6 m. Massive core, no fractures.
10.2-10.7	Light grey channel breccia at 10.2-10.3 m, then light grey, fine- to medium-grained sandstone.
10.7-13.7	Blue-grey mudstone and siltstone. Finely laminated and crossbedded throughout silty units. Core broken into 10-20 cm sections.
13.7-14.0	Green-brown, medium grained sandstone. Joint at 10° to core axis.
14.0-15.1	As above. Massive core.
15.1-16.2	Massive, blue-grey sandstone. Gradational with above.
16.2-16.8	Light grey channel breccia with organic partings.
16.8-20.1	Mixed light and medium grey, massive sandstone. Abundant organic partings. Core angle to bedding 80°. Some sections finely laminated.
20.1-21.3	Medium grey, massive, channel sandstone. Minor lamination in top 30 cm.
21.3-21.6	Olive green, medium grained sandstone.
21.6-26.8	Medium grey, medium grained sandstone. Locally, finely laminated with organic partings common from 23.8-24.4 m. Core angle to bedding 80°-85°. Generally massive with breaks at 30 cm-1 m intervals.

Depth (m)	Description
26.8-27.5	Channel breccia. Light to medium grey with blue mudstone fragments up to 2 cm in size. Broken core..
27.5-29.0	Light to medium grey, massive sandstone. One piece of core 15 cm long. However organic partings at 28.3-28.7 m.
29.0-32.3	Fine- to medium-grained, light to medium grey sandstone. Organic partings and fragments common at 29.9-30.2 m. Core probably solid, but broken in core tube. Minor green band at 31.9 m.
32.3-33.2	Light grey, channel breccia with common organic partings and coarse pebbly lag.
33.2-33.5	Light grey, medium grained sandstone.
33.5-34.0	Light grey, channel breccia with much organic partings. Some fragments up to 3 cm in size.
34.0-35.7	Massive, light to medium grey sandstone. Mainly medium grained, but some coarser bands locally. Joint at 34.4 m at 45° to core axis. Otherwise no joints. Unit has uniform colour.
35.7-36.9	As above.
36.9-37.2	Channel breccia with organic partings.
37.2	End of hole.

Hole Number:	WAL-86-02	Dip:	-90°
Location:	Wallace Quarries Ltd. Quarry, Wallace, Cumberland County	Started:	09/10/86
Latitude:	45°48'28.83"	Completed:	10/10/86
3° MTM:	N 5074541 m	Ultimate Depth:	29.6 m
Longitude:	63° 27'57.60"	Proposed Depth:	29.6 m
3° MTM:	E 385168 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	33.52 m	Figures:	44, p. 78; 45, p. 80
Azimuth	Not applicable		

Depth (m)	Description
0-4.0	Overburden.
4.0-11.0	Mixed olive and grey, medium grained sandstone. 4.0-4.4 m channel lag, grey siltstone clasts in medium grained, buff sandstone; 4.4- 7.5 m olive to buff, medium grained sandstone; 7.5-9.2 m blue-grey, medium grained sandstone, calcareous 9.0-9.2 m; 9.2 m coaly horizon 2 cm thick; 10.2 m coaly horizon 7 cm thick with pyrite and marcasite; 9.2-11.0 m mixed channel lag (calcareous) and sandstone, grey siltstone and mudstone clasts in sandstone matrix. 5.2-9.2 m usable sandstone. Joint at 6.2 m at 12° to core axis, brown staining on surface.

Depth (m)	Description
11.0-17.3	Mixed blue-grey mudstone, siltstone and channel lag. 11.0-13.6 m blue-grey mudstone with minor silty interbeds, core angle to bedding 82°; 14.2-16.6 m grey, medium grained sandstone with organic partings, crossbedded, mildly calcareous 13.9 m; 16.6-17.3 m grey channel lag with blue-grey mudstone-siltstone clasts, grey, medium grained, calcareous sandstone matrix; 17.0-17.3 m mainly calcareous sandstone with minor ripup clasts
17.3-29.6	Medium grained, grey sandstone. 17.3-19.9 m medium- to coarse-grained, grey, massive, channel sandstone; 19.9-20.0 m grey, channel breccia, siltstone clasts in calcareous sandstone matrix; 20.17 -20.23 m calcareous channel lag, siltstone clasts, sandstone matrix; 20.4-20.7 m abundant organic partings; 21.1-21.8 m channel lag, calcareous, siltstone fragments in sandstone matrix; 22.2-22.4 m abundant organic partings, core angle to bedding 5°-8°; 23.5 m mudstone clast 4 cm long; 24.9-25.1 m buff sandstone; 26.5-27.2 m grey sandstone with abundant organic partings; 28.1-28.7 m olive, fine grained sandstone, joint at 28.2 m at 7° to core axis; 28.8 m organic partings; 28.8-29.6 m mixed buff and grey, medium grained sandstone. Usable sandstone 17.3-19.7 m, 22.4-26.5 m and 27.1-29.6 m.
29.6	End of hole.

Hole Number:	WAL-86-03	Dip:	-90°
Location:	Wallace Quarries Ltd. Quarry, Wallace, Cumberland County	Started:	14/10/86
Latitude:	45°48'28.23"	Completed:	14/10/86
3° MTM:	N 5074523 m	Ultimate Depth:	32.6 m
Longitude:	63° 27'56.68"	Proposed Depth:	Not available
3° MTM:	E 385188 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	36 m	Figures:	44, p. 78; 45, p. 80
Azimuth	Not applicable		

Depth (m)	Description
0-13.7	Mixed green and brown sandstone boulders in a mud matrix. This was an old waste pile. Tree root at 13.7 m.
13.7-14.9	Grey-green, medium grained sandstone. Locally greyish blotches. Core is broken at 10-15 cm intervals. Separated from next unit by blue-grey, 1 cm clay seam.
14.9-16.2	Blue-grey, shaly mudstone-siltstone. Finely laminated core is broken at 5-10 cm intervals.
16.2-19.5	Medium grained sandstone. Olive green to 18 m where it is light grey and coarse grained with organic partings. Probably calcareous. Broken at 30-60 cm intervals.
19.5-19.8	Grey channel breccia. Sandstone just above probably calcareous.
19.8-20.7	Light to medium grey siltstone. Very blocky.
20.7-23.2	Medium grained sandstone. Olive green to 21.3 m then medium grey in colour. Organic partings and minor breccia at 22.6 m.

Depth (m)	Description
23.2-23.3	Light grey to white channel breccia. Both sandstone and shale ripup clasts in probable calcareous matrix.
23.3-23.5	Light grey, medium- to coarse-grained sandstone.
23.5-23.9	Light grey, channel breccia.
23.9-24.2	Light grey, coarse grained, channel breccia.
24.2-24.4	Medium to light grey, medium grained sandstone.
24.4-26.5	Medium grey, slightly mottled siltstone-mudstone. Broken at 20-30 cm intervals.
26.5-28.0	As above. Finely laminated and crossbedded in silty units.
28.0-29.0	Mixed channel breccia. Light grey sandstone and blue grey siltstone.
29.0-32.6	Mainly light to medium grey sandstone with minor olive green at 30.2 m. Abundant organic partings 32.2-32.6 m. Massive core up to 1 m unbroken.
32.6	End of hole.

Hole Number:	WAL-86-04	Dip:	-90°
Location:	Wallace Quarries Ltd. Quarry, Wallace, Cumberland County	Started:	15/10/86
Latitude:	45°48'29.76"	Completed:	15/10/86
3° MTM:	N 5074571 m	Ultimate Depth:	47.9 m
Longitude:	63° 27'51.26"	Proposed Depth:	Not available
3° MTM:	E 385304 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	36.72 m	Figures:	44, p. 78; 45, p. 80
Azimuth	Not applicable		

Depth (m)	Description
0-7.6	Mixed green and brown sandstone boulders and clay till.
7.6-8.8	Blue-grey mudstone.
8.8-10.4	Blue-grey siltstone, coarsens down.
10.4-11.6	Crossbedded and finely laminated fine- to medium-grained sandstone. Core angle to bedding 85°. Blue grey to light grey in colour. Fairly massive, no joints.
11.6-13.7	Medium grained, olive-green, massive sandstone. Minor organic partings at 11.6-11.9 m. Minor channel ripup clast at 12.3 m. No joints. Massive rock.
13.7-14.6	Blue-grey, medium grained sandstone. Organic partings common.
14.6-18.6	Massive, olive, fine- to medium-grained sandstone areas up to 3.2 m common. Minor organic at 16.2 m.

Depth (m)	Description
18.6-19.8	Light olive-green, medium grained sandstone with organic partings and ripup clasts at 19.4 m. Probably calcareous 19.5-19.8 m.
19.8-20.1	Channel breccia with organic partings.
20.1-20.4	Medium to light grey sandstone (calcareous), ends in channel breccia. Pyrite and green copper(?) mineral with coaly fragments.
20.4-20.7	Light grey, medium- to fine-grained sandstone.
20.7-20.8	Coal with pyrite and green copper mineral(?).
20.8-21.3	Light medium grey, fine- to medium-grained sandstone.
21.3-21.6	Light grey, channel breccia.
21.6-22.3	Medium grey, fine- to medium-grained sandstone.
22.3-22.6	Channel breccia with coaly fragments.
22.6-22.7	Olive-green sandstone.
22.7-22.9	Blue-grey mudstone.
22.9-26.2	Light to medium grey, fine- to medium-grained sandstone. Massive unit to 25.3 m with few joints. Pieces of core 1 m long. Organic partings and light grey 25.6-26.2 m.
26.2-26.5	Channel breccia with coaly fragments.
26.5-26.8	As above, no coal.
26.8-27.1	Blue-grey mudstone.
27.1-28.7	Blue-grey mudstone and siltstone. Vertical joint 27.4-27.7 m. Finely laminated and crossbedded.
28.7-30.8	Olive-green, fine- to medium-grained, massive sandstone. One piece of core was 2.4 m long.
30.8-34.4	Blue-grey, fine- to medium-grained, massive sandstone. One piece of core 2 m long. Green bands at 32.0 m, 32.6 m and 33.2 m. No obvious joints from 28.7-35.7 m.
34.4-35.4	As above. No green.
35.4-38.7	As above. Solid core. Joints at 37.2 m and 38.1 m.
38.7-41.8	As above. Organic partings at 40.2 m. Blocky at 40.8-41.1 m. No obvious joints. Core breaks at 60 cm intervals.
41.8-44.8	Blue-grey, medium grained, massive sandstone. Came out in one piece.
44.8-45.0	As above.
45.0-45.4	Olive sandstone. Joint at 45.3 m.
45.4-47.9	Blue-grey, massive sandstone. Minor organic partings at 47.4 m.
47.9	End of hole.

Hole Number:	WAL-86-05	Dip:	-90°
Location:	Wallace Quarries Ltd. Quarry, Wallace, Cumberland County	Started:	16/10/86
Latitude:	45°48'30.18"	Completed:	20/10/86
3° MTM:	N 5074584 m	Ultimate Depth:	78.3 m
Longitude:	63° 27'50.79"	Proposed Depth:	Not available
3° MTM:	E 385314 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	36.27 m	Figures:	44, p. 78; 45, p. 80
Azimuth:	Not applicable		

Depth (m)	Description
0-4.1	Overburden.
4.1-49	Brown, medium grained sandstone.
4.9-6.1	Blue-grey, fine- to medium-grained, crossbedded sandstone.
6.1-11.0	Mixed blue-grey siltstone, mudstone, minor blocky sandstone interbeds.
11.0-11.6	Blue-grey, fine- to medium grained, crossbedded sandstone.
11.6-14.3	Fine- to medium-grained, olive-green sandstone. Top 30 cm laminated with grey band at 11.9 m. Organic pieces and specks to 12.5 m. Ripup clasts at 13.4 m and 14.0 m. Stone massive, unjointed.
14.3-17.4	Olive-green, fine- to medium-grained sandstone. Massive with no joints. Organic partings and blue grey at 15.8-16.2 m. So called light stone 16.2-17.4 m.
17.4-19.05	Blue-grey, massive, fine- to medium-grained sandstone. No joints.
19.05-19.1	Coal horizon.
19.1-19.8	Blue-grey, medium grained sandstone with common organic partings. Green band at 19.2 m.
19.8-20.3	Channel breccia with many organic and coaly fragments. Probably calcareous at 19.8 m. Abundant pyrite blebs and stringers with organics and coal.
20.3-22.6	Light grey, calcareous sandstone.
22.6-23.5	Blue-grey siltstone. Blocky, finely laminated.
23.5-25.9	Light blue-grey, massive, fine- to medium-grained sandstone 1.5-2 m sections.
25.9-27.4	Light grey, laminated sandstone with organic partings abundant.
27.4-28.3	Channel breccia. Some blue shale clasts up to 3 cm.
28.3-29.6	Green, fine grained sandstone.
29.6-30.2	As above.
30.2-37.2	Massive, blue-grey, fine- to medium-grained sandstone. Minor green along joints at 32.3 m, 33.8 m and 35.4 m. Minor, finely laminated locally. Massive 3 m runs.
37.2-41.1	Light blue-grey, massive, medium grained sandstone 3 m runs. Core has slightly greenish patches locally.

Depth (m)	Description
41.1-41.8	Light grey sandstone with organic partings and coaly fragments.
41.8-42.4	Medium grey, laminated and crossbedded sandstone.
42.4-44.5	Brownish-grey to blue-grey, fine- to medium-grained sandstone. Locally blocky with siltstone band at 43.6 m.
44.5-51.8	Massive, medium blue-grey, fine- to medium-grained sandstone, 3 m core lengths. Locally, slightly laminated.
51.8-54.6	As above.
54.6-56.1	Blue-grey sandstone with organic and calcareous channel breccia at 54.6 m and 55.2-55.8 m. Limestone 55.8-56.1 m.
56.1-57.3	Calcareous channel lag with mudstone fragments in fine grained matrix.
57.3-57.6	Light grey, calcareous sandstone.
57.6-57.9	Blue-grey mudstone.
57.9-59.4	Medium to dark blue-grey sandstone. Somewhat blocky. Joint at 10° to core axis at 58. 5 m.
59.4-59.7	Channel breccia.
59.7-66.4	Mixed light and medium blue-grey, laminated and crossbedded sandstone-siltstone. Core in 60 cm-1.2 m lengths.
66.4-67.1	As above.
67.1-71.3	Massive, medium blue-grey, fine- to medium-grained sandstone. Core in 3 m lengths. Minor organic partings.
71.3-72.2	Blue-grey siltstone.
72.2-73.5	Grey, channel lag breccia in sandstone matrix. Some shale fragments 10 cm diameter.
73.5-73.8	Light grey, calcareous sandstone.
73.8-74.4	Medium grey sandstone with mudstone fragments.
74.4-75.3	Medium grey, massive sandstone.
75.3-75.6	Lag breccia with siltstone fragments.
75.6-75.9	Blue-grey siltstone.
75.9-78.3	Mixed blue-grey siltstone and blue-grey sandstone.
78.3	End of hole.

Hole Number: WAL-86-06
Location: Wallace Quarries Ltd. Quarry
 Wallace, Cumberland County
Latitude: 45°48'29.49"
3° MTM: N 5074563 m
Longitude: 63° 27'50.62"
3° MTM: E 385318 m
Datum: Mean sea level
Elevation: 36.84 m
Azimuth Not applicable

Dip: -90°
Started: 21/10/86
Completed: 22/10/86
Ultimate Depth: 53.9 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figures: 44, p. 78; 45, p. 80

Depth (m)	Description
0-4.3	Overburden.
4.3-4.9	Medium to light grey, crossbedded sandstone.
4.9-12.2	Blue-grey siltstone-mudstone. Crossbedded at 11.9-12.2 m. Very blocky.
12.2-21.0	Massive, olive-green, fine- to medium-grained sandstone. Fairly massive, locally organic partings. Some units up to 2 m thick.
21.0-27.1	Mainly blue-grey to grey, massive, fine- to medium-grained sandstone. Channel lag at 21.9 m and 23.5 m. Locally organic partings.
27.1-28.0	Channel lag. Blue mudstone clasts in sandy matrix.
28.0-41.5	Blue-grey to grey, massive, fine- to medium-grained sandstone. Iron stained at 37.8-38.4 m.
41.5-43.9	Mixed grey sandstone, minor silty muddy units at 41.5-41.8 m.
43.9-53.9	Massive, grey, medium grained sandstone. Excellent rock!
53.09	End of hole.

Hole Number: WAL-86-07
Location: Wallace Quarries Ltd. Quarry,
 Wallace, Cumberland County
Latitude: 45°48'28.86"
3° MTM: N 5074544 m
Longitude: 63° 27'50.97"
3° MTM: E 385311 m
Datum: Mean sea level
Elevation: 37.21 m
Azimuth Not applicable

Dip: -90°
Started: 22/10/86
Completed: 23/10/86
Ultimate Depth: 53.9 m
Proposed Depth: Not available
Drilled by: Nova Scotia Department of Mines
 and Energy
Geologist: G. Dickie
Figures: 44, p. 78; 45, p. 80

Depth (m)	Description
0-5.2	Overburden, brown sandstone float (?).
5.2-5.8	Light grey, crossbedded, fine sandstone.
5.8-11.9	Blue-grey mudstone-siltstone. Generally massive. Locally crossbedded. Blocky.

Depth (m)	Description
11.9-21.6	Olive to buff, medium grained sandstone. Locally organic partings and very blocky. Tends to light grey 20.7-21.6 m.
21.6-22.9	Channel lag. Blue mudstone fragments in sandy matrix.
22.9-24.1	Olive sandstone with local organic partings. Blocky.
24.1-29.0	Blue-grey, massive siltstone-mudstone. Very blocky.
29.0-39.9	Mixed blue-grey and minor olive-green, fine- to medium-grained sandstone. Same massive beds up to 2 m thick. Locally organic partings.
39.9-40.8	Blue-grey, crossbedded siltstone.
40.8-43.6	Blue-grey to grey, medium grained sandstone. Locally laminated with organic partings.
43.6-45.7	Blue-grey mudstone, channel lag and siltstone.
45.7-53.9	Massive, grey to blue-grey, fine- to medium-grained sandstone. Massive up to 3 m lengths. Minor organics 50.9-53.9 m.
53.9	End of hole.

Hole Number:	WAL-86-08	Dip:	-90°
Location:	Wallace Quarries Ltd. Quarry, Wallace, Cumberland County	Started:	27/10/86
Latitude:	45°48'27.95"	Completed:	28/10/86
3° MTM:	N 5074516 m	Ultimate Depth:	53.9 m
Longitude:	63° 27'50.49"	Proposed Depth:	Not available
3° MTM:	E 385322 m	Drilled by:	Nova Scotia Department of Mines and Energy
Datum:	Mean sea level	Geologist:	G. Dickie
Elevation:	37.40 m	Figures:	44, p. 78; 45, p. 80
Azimuth	Not applicable		

Depth (m)	Description
0-6.7	Overburden.
6.7-8.2	Olive, fine grained sandstone. Very blocky.
8.2-11.7	Blue-grey mudstone coarsens down to siltstone. Crossbedded at 11.7 m.
11.7-16.8	Massive, fine- to medium-grained, olive sandstone. Minor organic partings locally. Joints at 1-2 m.
16.8-23.2	Massive, blue, fine- to medium-grained sandstone with minor zones of olive rock. Organic partings 20.7-23.2 m. Minor channel breccia at 22.9 m.
23.2-23.5	Grey, channel breccia with blue shale clasts in sandy matrix.
23.5-24.8	Massive, blue-grey, medium grained sandstone.
24.8-25.5	Channel lag. Grey siltstone clasts in sandy matrix.

Depth (m)	Description
25.5-27.1	Blue-grey, fine- to medium-grained sandstone with organic partings common.
27.1-28.0	Channel lag. Blue-grey siltstone clasts in grey, sandy matrix.
28.0-29.0	Olive-green, fine- to medium-grained sandstone.
29.0-29.4	Grey, medium grained sandstone.
29.4-29.9	Olive sandstone.
29.9-47.2	Blue-grey to grey, massive, fine- to medium-grained sandstone. Massive core in 3 m lengths. Rusty zone at 37.5 m. Near vertical joint. Tends to medium grey below 45.7 m.
47.2-47.5	Medium grey, channel lag.
47.5-53.9	Medium grey, medium grained sandstone. Minor organic partings locally. Joints at 1 m intervals.
53.9	End of hole.

APPENDIX 2.

NOVA SCOTIA DEPARTMENT OF NATURAL RESOURCES

BUILDING STONE PROJECT SAMPLE LIST

(Samples available for viewing at the Core Library, Debert)

BUILDING STONE PROJECT SAMPLE LIST

Sample Number	Property Name	Commercial Stone Name	Page
Box #1			
86-01-14	Queensport Quarry	Granite, Grey	20
86-01-02	Shelburne Island Park Quarry	Granite, Grey (Scotia Grey)	33
86-01-30	First Fork Brook Occurrence	Granite, Red	35
86-01-05	Brookfield Quarry	Granite, White (Brookfield White)	37
86-01-06	Quarry Lake Granite Quarry	Granite, White	42
85-06-22	Seafoam Quarries	Sandstone, Brown	50
85-06-23	Seafoam Quarries	Sandstone, Brown	50
85-06-21	Toney River Quarry	Sandstone, Brown	51
85-06-40	Barneys River Quarry	Sandstone, Buff	53
85-06-41	Four Mile Brook Quarry	Sandstone, Buff	54
85-01-12	Gammon and Weir Quarry	Sandstone, Buff	55
85-01-01	McKeens Quarry	Sandstone, Buff	59
85-02-02	Sawmill Brook Quarry	Sandstone, Buff	63
85-04-39	Wallace Ridge Quarry	Sandstone, Olive	69
85-02-45	Wallace River Quarries	Sandstone, Olive	70
85-06-42	Huggans Brook Quarry	Sandstone, Olive	73
85-02-16	MacPherson Quarry	Sandstone, Olive	74
Wal-86-01	Wallace Quarries Ltd. Quarry	Sandstone, Olive and Grey	77
85-05-10	Graham River Quarry	Sandstone, Red and Buff	88
85-04-07	Marys Point Quarries	Sandstone, Brown	161
85-04-08	Marys Point Quarries	Sandstone, Brown	161
85-04-09	Marys Point Quarries	Sandstone, Brown	161
Box #2			
ERV-88-04	Arsenault Quarry, West Erinville	Granite, Black (Dawn Black)	11
Box #3			
86-01-28	Scatarie Island Occurrence	Breccia, Red and Green	7
87-01-05A	Fletchers Lake Quarry	Granite, Grey	23
87-01-03	Quarry Lake Quarry	Granite, Grey (Silver Grey)	28
87-01-04	Aspotogan Quarry	Granite, Grey	32

APPENDIX 3.
RESTORATION OF HISTORIC BUILDINGS
BY
LES BATTEN
MARITIME CANSTONE INC.

RESTORATION OF HISTORIC BUILDINGS

by Les Batten Maritime Canstone Inc.

Much of our building heritage is of stone. In fact, in the Atlantic Provinces and, to a lesser degree, in other parts of Canada and the United States, a large number of the heritage buildings are built of Nova Scotia sandstone.

A high proportion of these buildings, especially those built in the 1800s and early 1900s are in need of restoration. Fortunately society recognizes the value of protecting and preserving these heritage properties for future generations.

The restoration of historic buildings is only one of many ways to conserve these buildings. There are five forms of conservation. They are preservation, consolidation, reconstruction, reproduction and restoration. A brief explanation of these forms follows.

The object of **preservation** is to maintain the building in its existing state. Repairs should only be carried out to prevent further decay. This type of conservation is usually applied to historic ruins.

Consolidation involves the application of a chemical, or adhesive, to the building to ensure the stability of the face in the short term. It is usually used to retain the façade at its present standard until the resources are available for restoration.

Reconstruction enables the movement or rebuilding or both of endangered or unstable historic buildings.

Reproduction is the copying of details or buildings to maintain the integrity of a particular area or site. Reproductions of the carvings on a building can sometimes be justified if the original has been obliterated by wear and sufficient data are available for that carving to be reproduced in its original detail.

The art of **restoration** is intended to return the building to its original concept and restore only what is necessary (a) to achieve the stability of the structure, (b) to achieve the aesthetic value of the building, and (c) to enhance the usage of the building.

During restoration, details and features are renewed. Their reinstatement relies on respect for the original design and material used, plus the use of the original drawings if they are available.

Replacement of these details must follow the original design, but also be identifiable, on close examination, from the original in order to correctly retain the architectural significance. It should not be the intention of the restorer to falsify the fact of repair; indeed, it should be said that, any contribution, from any period, must be respected if that addition or restoration can be considered to be of historical value.

Many churches, cathedrals, stately homes and public buildings have, in their lifetimes, been subject to alterations and improvements which have now become historic in their own right. It is very doubtful if the removal of these additions to reveal underlying architectural features can be justified. It would need very careful evaluation and in-depth consultation before this type of project is embarked upon.

The aesthetic value of historic buildings demands that as much as possible of the original artisans' work, plus the patina of age associated with old buildings, be retained for all to see.

To achieve the optimum results on any restoration program it is essential to have a team of restorers who bring together the required multidisciplinary skills. This team should include a cross-section of abilities and be headed by an historical architect. His/her duties should include the ordering of priorities and co-ordination of the various professionals and craftspeople. An ideal team would include engineers, contractors, suppliers, craftspeople from the various disciplines, possibly a landscape architect, as well as historians, archeologists and geologists. All of these disciplines are needed to achieve the best results.

Unfortunately skilled craftspeople are in short supply, and there has been little evidence of formal training for the professionals required for restoration projects. Also, the reduced use of stone in building

construction in the last 50 years has caused quarries to close because of lack of orders. This has made once common building stone either unavailable or too costly for restoration projects.

RESTORATION PROJECTS

During any large restoration project a series of preliminary functions must be carried out. These are: initial inspection, proposal, acceptance, appointments, site preparations, drawings, cleaning, detailed inspection, stone preparation, stone fixing and site clearance.

Initial inspection is carried out to determine: (a) the amount of restoration required, (b) the importance of certain façades, (c) the urgency of remedial work, and (d) the method of approach. These inspections are best carried out using scaffolding or hydraulic platforms to enable a close and thorough survey.

A **proposal** document is submitted to the client for approval and should contain all the information gleaned from the initial inspection. It should contain recommendations for materials, labour, scope of work, project time, and be accompanied by some photographic evidence of the necessity for restoration.

The client will **accept** the proposal submitted before ongoing preparations can continue, usually after counter proposals have been considered and negotiations completed.

Following acceptance of the proposal, **appointments** with the architect, project manager, subcontractors, suppliers, plus other professionals as required must be made, or approved, by the client.

During **site preparation**, site offices are set up, discussions held with property owners or users to designate areas for storage of material, to highlight problem areas, to agree to the proposed sequence of work, the limits of the site, and the various services that will be required.

Scale **drawings** should be provided by the architectural services to cover all elevations where restoration is required.

Scaffolding should be erected and **cleaning** carried out, if desired, prior to detailed inspection.

Using the scale drawings provided, a **detailed inspection** of the façade should be carried out by the architect, project manager and perhaps the client. Stones selected for restoration are recorded.

The project manager and his team provide detailed shop drawings corresponding to the information on the master drawings; these are submitted to the workshop for **stone preparation**.

Manufactured stones are delivered to site to be **fixed** in the positions designated on the master drawing.

On completing the restoration, temporary sheds, offices, scaffolding and rubbish need to be removed and the **site returned to original use**.

RESTORATION OF PROVINCE HOUSE, HALIFAX

To illustrate the foregoing, this section describes the restoration of Province House, Halifax, Nova Scotia, which was undertaken between 1985 and 1990.

Introduction

Province House was built over a period of eight years and opened in 1819. Its design is thought to have been influenced by the Adams brothers, the leading exponents of the Palladian (or Georgian) style. It is classic in its dimensions, with its length being twice its width and with the opposite elevations being identical. One of the many outstanding features of this building is the extremely intricate and beautifully carved coat of arms, an outstanding example of the architectural carver's art. It was executed by David Kinnear who is responsible for other fine works in Halifax. Added to its fine architectural value, it has a unique place in both the social and political history of Canada, indeed, a building worthy of restoration (Fig. A3-1).

Proposals for the project were sought from various sources, and, after extensive negotiations which



Figure A3-1. Province House, Halifax, Nova Scotia

included a Federal Manpower search for competent Canadian experience, it was decided to accept a proposal from an English company. A provision of this award was the inclusion of a training program to teach 12 Nova Scotia apprentices the art of stone restoration, with the intention of having a workforce available to carry out further restoration projects without the necessity of overseas input.

Project

The contract began in March 1985. Sub-contractors were selected for the scaffolding and cleaning and the scaffolding was erected in June.

Cleaning was carried out under the direct supervision of the project manager to a specification determined by the contractor, and agreed on by the client.

The method of cleaning was arrived at after very careful consideration of the budget, the material to be cleaned, and various tests to determine the least damaging method. Every cleaning method has its drawbacks and all cleaning projects need to be evaluated on their own merit. It is sometimes necessary to use several different methods.

Cleaning historic buildings should only be undertaken after careful evaluation of the reasons why

and the consequences of the cleaning. The success of any type of cleaning relies heavily on the skills of the equipment operators. It is therefore very important for architects and contractors to carefully assess the cleaning companies before awarding the cleaning contract. The need to clean the building is not just for aesthetic reasons, but also to determine the amount of restoration required. This is almost impossible to accurately assess until the dirt has been removed.

With these evaluations completed it was decided to use an adapted wet head to clean Province House. Upon completion of the

cleaning, an inspection was made by the architect and the project manager to determine which stones needed replacement, and to mark the drawings during scaffolding work. The elevations were divided into sections and marked one section at a time. Stones were given a letter and a number to identify them on the working drawings. When the operation was complete, the stones selected for renewal were marked on the master drawing, with one copy each, for the site and the workshop.

The next phase was to provide job cards for each stone that needed manufacturing. In conjunction with this, full sized drawings of mouldings for cornice stone, arch stone, column bases and any other stone that could not be identified by measurement were provided.

Descriptions on the job cards give both dimensions and a picture and are intended to give to the banker mason all the information required to manufacture the finished article. The reference marks correspond to the master drawing and are inscribed on each stone for identification.

Training

The Province House Restoration Project contract required that the project manager establish a training program to teach stone restoration masonry to interested Nova Scotians.

In order to give the correct training in stone restoration, it is necessary to have both theory and hands-on practical training, over a period of time. Three years of theory and four years of practical work are needed. To this end a program to train 12 apprentices was established.

A workshop was set up during 1985 and basic stone cutting machinery was purchased from Scotland in the United Kingdom and installed in the workshop in readiness for the start of the cutting program in 1986. In November 1985 12 people were selected to become the pilot group of apprentices. Negotiations were carried out with the Nova Scotia Department of Education to allocate teachers and space at the Nova Scotia Institute of Technology, for the purpose of classroom training to cover science (building), mathematics, geometry, communications and blue print reading.

In addition to this the Nova Scotia Department of Mines and Energy gave both classroom and field training in basic geology. The craftspeople imported from England taught the stone masonry subjects.

February 3, 1986, marked the start of the training period for the apprentices and also the start of the physical restoration. One of the first tasks was for apprentices to become familiar with masonry tools. Stone was provided during the month of February for this purpose, hand cutting being the order of the day.

In the month of March production began and stones required for the replacement of the chimney stack and the restoration of the cornice were prepared.

Site work began in April with the cutting out of stones, followed by the fixing of these stones in May. This sequence of events continued throughout the year.

During the detailed inspection, it was noted that a number of stones had originally been fixed with the bedding planes running vertically. Face bedding, as this is called, allows water to penetrate these bedding planes, separating them and causing layering. Freeze-

thaw cycles and salt expansion cause pressure which is usually enough to dislodge some of these layers. This is known as exfoliation.

During the last 30 years an attempt was made to halt this breakdown by the application of a cementitious compound. Unfortunately, this type of repair can accelerate the decay if improperly carried out. A very hard cement-sand coating was used and the inevitable crazing of the surface occurred. This allowed water to penetrate the body of the stone.

Water, which is a primary cause of decay in stone because of the many impurities contained in it, will attempt to migrate back to the surface of the stone. Unfortunately, any surface coating causes a barrier and, as the water evaporates behind this barrier, the resulting salt crystals expand and push the cement face off. This in turn provides pockets for retention of acidic rain allowing ongoing decay of the stone.

These factors accounted for at least 90% of the required restoration on Province House. The remaining 10% was attributed to weathering, i.e. attrition that occurs through erosion, chemical action, frost damage or stress.

Stone required for the restoration was obtained from the Wallace Quarries Ltd. Quarry, Cumberland County. This stone varies slightly from the original stone used in the building of Province House, which also came from Wallace, but from a now abandoned quarry (Wallace River Quarries (Battye Quarry)). The slight difference in colour will create just enough visual evidence of the restoration to identify it without being obtrusive.

The Province House Restoration Project was completed in 1990. The finished product is a credit to the original builders and to the many skilled masons who carried out the restoration work. Not only has a valuable building been restored to its original beauty, but a new industry has emerged in the region. The skilled masons who have moved to Nova Scotia for this project, combined with the apprentices trained over the course of the project, have the skill and the knowledge to carry out other much needed restoration work on stone buildings throughout the region.

APPENDIX 4.

MARYS POINT QUARRIES, MARYS POINT, ALBERT COUNTY, NEW BRUNSWICK, SANDSTONE, BROWN

(Art Gallery of Nova Scotia, Fig. A4-1)

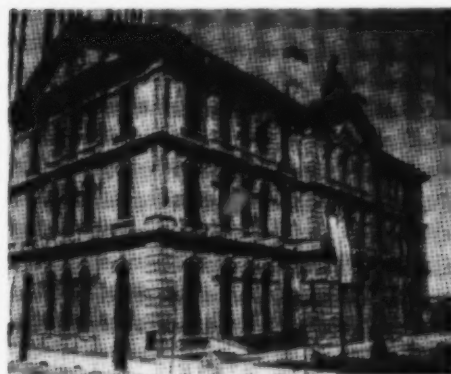


Figure A4-1. The restoration of the Art Gallery of Nova Scotia, Halifax, formerly the Dominion Building, was completed in 1989 using brown sandstone from the Marys Point Quarries, New Brunswick.

Commercial Stone Name: SANDSTONE, BROWN
County: ALBERT
Property Name: MARYS POINT QUARRIES
 MARYS POINT, NEW BRUNSWICK

NTS: 21H/10

Longitude: 64°38'54"

Latitude: 45°42'57"

Sample Number: 85-04-07 Box 1; 85-04-08 Box 1;
 85-04-09 Box 1

Date: September 10, 1985

Property Status: Abandoned

Geological Rock Name: Sandstone

Possible Uses: Ashlar, fine carving, rubble stone

Location Description: The old sandstone quarries are located along the southeastern side and eastern tip of Marys Point, New Brunswick (Fig. A4-2). Marys Point is 5 km east of Harvey and 1.7 km west of Grindstone Island.

Production History: The Albert Stone Company Quarry was opened sometime before 1845 and was managed by George Lang until 1850. It was sold to Mr. Walter Roberts around 1870 and stone was shipped into New England until 1878. At that time there were over 20 families living on the Point. After

the Quarry closed in 1878 families continued to live there until 1920.

Colour: Fresh buff and red brown; weathered grey; variable

Grain Size: Fine to medium; variable

Fabric: No

Bedding: Strike 100°, Dip 30°S; thickness range 5 mm-2 cm

Jointing: Regular to irregular; limited to moderate

Grain: Strike 35°, Dip 80°SE; spacing 20 cm-3 m

Rift: Strike 10°, Dip 60°; spacing irregular

Potential Quarry Block Size: 1 m x 2 m x 50 cm

Outcrop Exposure: Good

Use of Explosives: No

Mineralogy: Fine grains of quartz and feldspar of <0.1 mm in a chiefly argillaceous cement

Deleterious Minerals: Minor organic partings

Other Features: The series of brown and buff sandstones are variable in colour and thickness and are

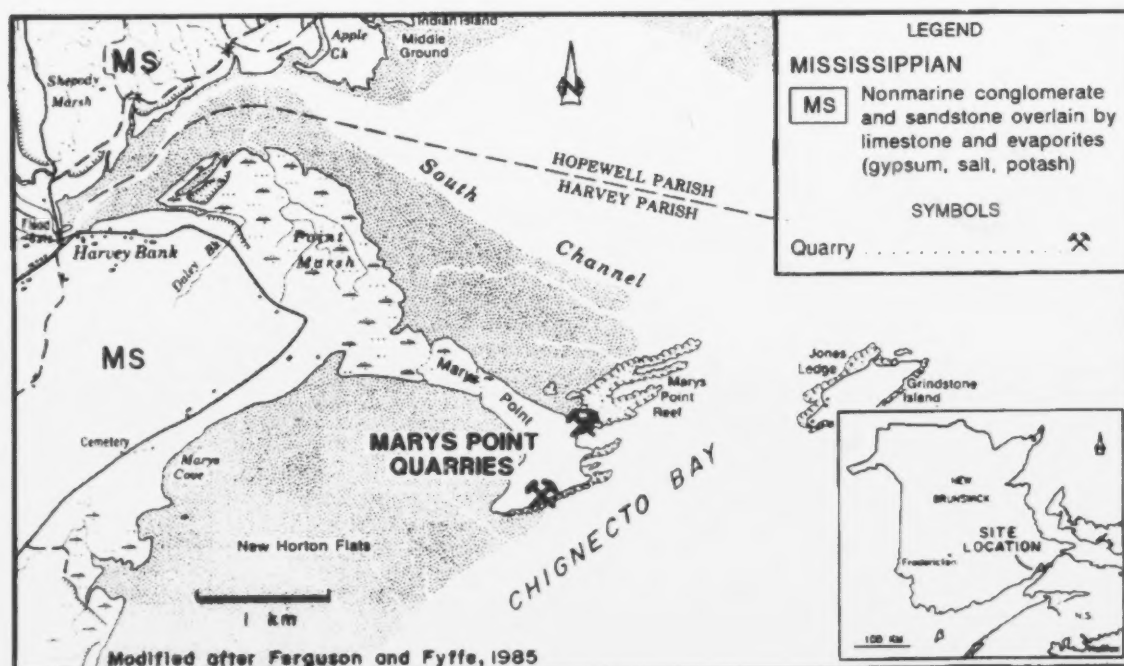


Figure A4-2. Geological location map for the Marys Point Quarries, Marys Point, Albert County, New Brunswick.

interlaminated with shales. This coupled with the steep dip into the ocean make further development difficult.

Diamond Drilling Details: Not drilled

Physical Properties (Parks, 1914): Specific weight 144.834 lbs/ft³, Absorption 5.596%, Compressive strength 14,675 lbs/in², Transverse strength 1,532 lbs/in² (red brown)

Comments: The old Quarry workings are well described by Parks (1914). He stated, "For a distance of about half a mile an almost continuous line of quarries has been opened along the shore. Beginning at the southwest margin of the exposures and proceeding to the northeast angle of the point, the following general sequence is presented. The first opening consists of a V shaped cut, about 200 feet long and 50 feet wide, extending along the strike of the beds. The seaward stone is red but this colour gives place to grey towards the inner side of the belt. Much of the output has been rejected owing to false bedding and the presence of concretions. Proceeding eastward, the red stone is entirely replaced by the grey, which forms a belt about 200 feet thick resting on an underlying band of shale. The best quality of stone seems to occur near the shale, and has been removed to water level along this stretch. Still farther

on, both red and grey stone is met with under the bed of shale referred to above: it has been opened in a line of quarries along the shore facing Grindstone island. On rounding the point to Grindstone island, beds of shale are first encountered, then heavy beds of laminated red sandstone. This red series is perhaps 100 feet thick and is succeeded by a narrow belt of grey. A considerable mass of shale with thin seams of coal and much iron pyrites follows: this is succeeded, in its turn, by various shades of red, grey, chocolate, and mottled sandstones, which end, towards the northeast angle, in heavier beds of grey. Around the point, looking into the mouth of Shepody river, the sandstones are thin bedded and soon disappear beneath the drift."

The Art Gallery of Nova Scotia (Dominion Building) and Court House, Halifax, are two important buildings constructed of the Marys Point brown stone. The Art Gallery of Nova Scotia restoration began in 1987 and required the old Quarry to be reopened for a short time in order to quarry enough stone for the restoration. Special permission was granted by Environment Canada allowing the removal of about 50 000 t of stone in the fall of 1987. Further development of a quarry here is not possible because the site is a designated bird sanctuary and any other use of the land is prohibited.

Appendix 5.

Glossary of Building Stone Terms

(Carr, 1955; Parks, 1914; Verschuren et al., 1986; Warland, 1953)

GLOSSARY OF BUILDING STONE TERMS

(Carr, 1955; Parks, 1914; Verschuren et al., 1986; Warland, 1953)

Arch: a mechanical arrangement of blocks of any hard material disposed in the line of same curve, and supporting one another by their mutual pressure; the arch itself is formed of arch stones.

Architectural Stone: nonload-bearing cut panels (1.5-13 cm thick) used as curtain wall or veneer in building construction; commonly referred to as cladding by the industry; also includes interior-exterior flooring.

Ashlar: wrought stone of uniform height, as opposed to rubble work, used chiefly for facing walls.

Banker Mason: a stone mason who cuts stone in a shop or on the job site at the banker or working bench.

Beds: the lower surface upon which a block of stone rests, and the upper surface which supports the stone above.

Cleavage: The tendency of a rock to split in parallel layers, irrespective of its original structure.

Column Base: that part of a column which supports the shaft and capital.

Commercial Granite: includes all feldspathic rocks of granular or gneissic texture and all plutonic rocks regardless of composition; can include volcanic, siliceous sedimentary rocks and metamorphic rocks.

Commercial Marble: denotes all carbonate rocks including true metamorphic marble and limestone which can be polished.

Commercial Sandstone: includes all sandstones, calcareous sandstones and sedimentary rocks which are comprised of individual grains supported by a natural cementitious material; often shows bedding planes.

Cornice: the projecting moulded course which crowns the part of the wall to which it is affixed.

Course: the term applied to each horizontal layer of stone.

Curbing Stone: rectangular shaped blocks, usually granite, (approximately 0.15 x 0.45 x 2 m) for use as curbing in road and bridge construction.

Flagstone: stone which can be split into thin slabs for sidewalks, patios, etc.

Grain: refers to a plane in igneous rocks which is parallel to the long axis of a predominance of grains; crystalline rocks split most readily in this direction.

Hardway: refers to a plane in igneous rocks which is at 90° to both the rift and the grain; this is the direction in which it is most difficult to split crystalline rocks.

Landscaping Stone: includes crushed, coloured stone, boulders, irregular blocks, etc. for landscaping applications such as driveways, sidewalks, rock gardens, borders, etc.

Large Quarry Block: rectangular blocks ranging from 15-25 t.

Monumental Stone: all natural stone used for the manufacture of statues, tombstone, mausoleums, cenotaphs and monuments.

Ornamental Stone: any attractive rock suitable for the manufacture of small articles such as ash trays, pen holders, bookends, etc.

Paving Stone: rectangular, brick sized blocks of roughly equal dimensions for sidewalks, driveways and road construction.

Rift: refers to a plane in igneous and crystalline rocks in which the crystals are roughly aligned at 90° to the grain.

Rubble: randomly sized and shaped stone for wallfacing, fences, fireplaces, etc.

Split Face: the resulting surface texture which arises from splitting a stone.

